Fernandez-Salas, E. et al., Botulinum Toxin Screening Assays

SEQUENCE LISTING

<110> Fernandez-Salas, Ester
      Garay, Patton
      Aoki, Kei Roger

<120> Botulinum Toxin Screening Assays

<130> 17596 (BOT)

<150> US 60/547,591
<151> 2004-02-24

<160> 32

<170> FastSEQ for Windows Version 4.0

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<213> Homo sapiens FGFR3IIIb

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<211> 808
<212> PRT
<213> Homo sapiens FGFR3IIIb

<400> 2

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Gly Arg Ala Ala Glu Val Pro Gly Pro Glu Pro Gly Gln Gln Glu Gln
            35                  40                  45
Leu Val Phe Gly Ser Gly Asp Ala Val Glu Leu Ser Cys Pro Pro Pro
        50                  55                  60
Gly Gly Gly Pro Met Gly Pro Thr Val Trp Val Lys Asp Gly Thr Gly
65                  70                  75                  80
Leu Val Pro Ser Glu Arg Val Leu Val Gly Pro Gln Arg Leu Gln Val
                85                  90                  95
Leu Asn Ala Ser His Glu Asp Ser Gly Ala Tyr Ser Cys Arg Gln Arg
                100                 105                 110
Leu Thr Gln Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala
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              115                        120                        125
Pro Ser Ser Gly Asp Asp Glu Asp Gly Glu Asp Glu Ala Glu Asp Thr
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Gly Val Asp Thr Gly Ala Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp
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Lys Lys Leu Leu Ala Val Pro Ala Ala Asn Thr Val Arg Phe Arg Cys
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Pro Ala Ala Gly Asn Pro Thr Pro Ser Ile Ser Trp Leu Lys Asn Gly
              180                        185                        190
Arg Glu Phe Arg Gly Glu His Arg Ile Gly Gly Ile Lys Leu Arg His
              195                        200                        205
Gln Gln Trp Ser Leu Val Met Glu Ser Val Val Pro Ser Asp Arg Gly
    210                        215                        220
Asn Tyr Thr Cys Val Val Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr
225                        230                        235                        240
Tyr Thr Leu Asp Val Leu Glu Arg Ser Pro His Arg Pro Ile Leu Gln
              245                        250                        255
Ala Gly Leu Pro Ala Asn Gln Thr Ala Val Leu Gly Ser Asp Val Glu
              260                        265                        270
Phe His Cys Lys Val Tyr Ser Asp Ala Gln Pro His Ile Gln Trp Leu
              275                        280                        285
Lys His Val Glu Val Asn Gly Ser Lys Val Gly Pro Asp Gly Thr Pro
    290                        295                        300
Tyr Val Thr Val Leu Lys Ser Trp Ile Ser Glu Ser Val Glu Ala Asp
305                        310                        315                        320
Val Arg Leu Arg Leu Ala Asn Val Ser Glu Arg Asp Gly Gly Glu Tyr
              325                        330                        335
Leu Cys Arg Ala Thr Asn Phe Ile Gly Val Ala Glu Lys Ala Phe Trp
              340                        345                        350
Leu Ser Val His Gly Pro Arg Ala Ala Glu Glu Glu Leu Val Glu Ala
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Asp Glu Ala Gly Ser Val Tyr Ala Gly Ile Leu Ser Tyr Gly Val Gly
    370                        375                        380
Phe Phe Leu Phe Ile Leu Val Val Ala Ala Val Thr Leu Cys Arg Leu
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Arg Ser Pro Pro Lys Lys Gly Leu Gly Ser Pro Thr Val His Lys Ile
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Ser Arg Phe Pro Leu Lys Arg Gln Val Ser Leu Glu Ser Asn Ala Ser
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Met Ser Ser Asn Thr Pro Leu Val Arg Ile Ala Arg Leu Ser Ser Gly
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Glu Gly Pro Thr Leu Ala Asn Val Ser Glu Leu Glu Leu Pro Ala Asp
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Pro Lys Trp Glu Leu Ser Arg Ala Arg Leu Thr Leu Gly Lys Pro Leu
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Gly Glu Gly Cys Phe Gly Gln Val Val Met Ala Glu Ala Ile Gly Ile
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Asp Lys Asp Arg Ala Ala Lys Pro Val Thr Val Ala Val Lys Met Leu
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Glu Met Met Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn Leu Leu
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Gly Ala Cys Thr Gln Gly Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala
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Ala Lys Gly Asn Leu Arg Glu Phe Leu Arg Ala Arg Arg Pro Pro Gly
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Phe Lys Asp Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly Met Glu
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Tyr Leu Ala Ser Gln Lys Cys Ile His Arg Asp Leu Ala Ala Arg Asn
        610                      615                      620
Val Leu Val Thr Glu Asp Asn Val Met Lys Ile Ala Asp Phe Gly Leu
625                      630                      635                      640
Ala Arg Asp Val His Asn Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly
                645                      650                      655
Arg Leu Pro Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp Arg Val
            660                      665                      670
Tyr Thr His Gln Ser Asp Val Trp Ser Phe Gly Val Leu Leu Trp Glu
        675                      680                      685
Ile Phe Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu
        690                      695                      700
Leu Phe Lys Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro Ala Asn
705                      710                      715                      720
Cys Thr His Asp Leu Tyr Met Ile Met Arg Glu Cys Trp His Ala Ala
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Pro Ser Gln Arg Pro Thr Phe Lys Gln Leu Val Glu Asp Leu Asp Arg
            740                      745                      750
Val Leu Thr Val Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser Ala Pro
        755                      760                      765
Phe Glu Gln Tyr Ser Pro Gly Gly Gln Asp Thr Pro Ser Ser Ser Ser
        770                      775                      780
Ser Gly Asp Asp Ser Val Phe Ala His Asp Leu Leu Pro Pro Ala Pro
785                      790                      795                      800
Pro Ser Ser Gly Gly Ser Arg Thr
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<211> 2421
<212> DNA
<213> Homo sapiens FGFR3IIIc

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<211> 806
<212> PRT
<213> Homo sapiens FGFR3IIIc

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             20                  25                  30
Gly Arg Ala Ala Glu Val Pro Gly Pro Glu Pro Gly Gln Gln Glu Gln
         35                  40                  45
Leu Val Phe Gly Ser Gly Asp Ala Val Glu Leu Ser Cys Pro Pro Pro
     50                  55                  60
Gly Gly Gly Pro Met Gly Pro Thr Val Trp Val Lys Asp Gly Thr Gly
 65                  70                  75                  80
Leu Val Pro Ser Glu Arg Val Leu Val Gly Pro Gln Arg Leu Gln Val
             85                  90                  95
Leu Asn Ala Ser His Glu Asp Ser Gly Ala Tyr Ser Cys Arg Gln Arg
            100                 105                 110
Leu Thr Gln Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala
        115                 120                 125
Pro Ser Ser Gly Asp Asp Glu Asp Gly Glu Asp Glu Ala Glu Asp Thr
    130                 135                 140
Gly Val Asp Thr Gly Ala Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp
145                 150                 155                 160
Lys Lys Leu Leu Ala Val Pro Ala Ala Asn Thr Val Arg Phe Arg Cys
                165                 170                 175
Pro Ala Ala Gly Asn Pro Thr Pro Ser Ile Ser Trp Leu Lys Asn Gly
            180                 185                 190
Arg Glu Phe Arg Gly Glu His Arg Ile Gly Gly Ile Lys Leu Arg His
        195                 200                 205
Gln Gln Trp Ser Leu Val Met Glu Ser Val Val Pro Ser Asp Arg Gly
    210                 215                 220
Asn Tyr Thr Cys Val Val Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr
225                 230                 235                 240
Tyr Thr Leu Asp Val Leu Glu Arg Ser Pro His Arg Pro Ile Leu Gln
                245                 250                 255
Ala Gly Leu Pro Ala Asn Gln Thr Ala Val Leu Gly Ser Asp Val Glu
            260                 265                 270
Phe His Cys Lys Val Tyr Ser Asp Ala Gln Pro His Ile Gln Trp Leu
        275                 280                 285
Lys His Val Glu Val Asn Gly Ser Lys Val Gly Pro Asp Gly Thr Pro
    290                 295                 300
Tyr Val Thr Val Leu Lys Thr Ala Gly Ala Asn Thr Thr Asp Lys Glu
305                 310                 315                 320
Leu Glu Val Leu Ser Leu His Asn Val Thr Phe Glu Asp Ala Gly Glu
                325                 330                 335
Tyr Thr Cys Leu Ala Gly Asn Ser Ile Gly Phe Ser His His Ser Ala
            340                 345                 350
Trp Leu Val Val Leu Pro Ala Glu Glu Glu Leu Val Glu Ala Asp Glu
        355                 360                 365
Ala Gly Ser Val Tyr Ala Gly Ile Leu Ser Tyr Gly Val Gly Phe Phe
    370                 375                 380
Leu Phe Ile Leu Val Val Ala Ala Val Thr Leu Cys Arg Leu Arg Ser
385                 390                 395                 400
Pro Pro Lys Lys Gly Leu Gly Ser Pro Thr Val His Lys Ile Ser Arg
                405                 410                 415
Phe Pro Leu Lys Arg Gln Val Ser Leu Glu Ser Asn Ala Ser Met Ser
            420                 425                 430
Ser Asn Thr Pro Leu Val Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly
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6

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Pro Thr Leu Ala Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys
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Trp Glu Leu Ser Arg Ala Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu
465                    470                    475                    480
Gly Cys Phe Gly Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys
                 485                    490                    495
Asp Arg Ala Ala Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp
                 500                    505                    510
Asp Ala Thr Asp Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met
                 515                    520                    525
Met Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala
        530                    535                    540
Cys Thr Gln Gly Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys
545                    550                    555                    560
Gly Asn Leu Arg Glu Phe Leu Arg Ala Arg Arg Pro Pro Gly Leu Asp
                 565                    570                    575
Tyr Ser Phe Asp Thr Cys Lys Pro Pro Glu Glu Gln Leu Thr Phe Lys
                 580                    585                    590
Asp Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu
                 595                    600                    605
Ala Ser Gln Lys Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu
        610                    615                    620
Val Thr Glu Asp Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg
625                    630                    635                    640
Asp Val His Asn Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu
                 645                    650                    655
Pro Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr
                 660                    665                    670
His Gln Ser Asp Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile Phe
        675                    680                    685
Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe
        690                    695                    700
Lys Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys Thr
705                    710                    715                    720
His Asp Leu Tyr Met Ile Met Arg Glu Cys Trp His Ala Ala Pro Ser
                 725                    730                    735
Gln Arg Pro Thr Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Val Leu
        740                    745                    750
Thr Val Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser Ala Pro Phe Glu
        755                    760                    765
Gln Tyr Ser Pro Gly Gly Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly
        770                    775                    780
Asp Asp Ser Val Phe Ala His Asp Leu Leu Pro Pro Ala Pro Pro Ser
785                    790                    795                    800
Ser Gly Gly Ser Arg Thr
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<211> 2085
<212> DNA
<213> Homo sapiens FGFR3IIIS

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7

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<211> 694
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<212> PRT
<213> Homo sapiens FGFR3IIIS

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                 20                  25                  30
Gly Arg Ala Ala Glu Val Pro Gly Pro Glu Pro Gly Gln Gln Glu Gln
           35                  40                  45
Leu Val Phe Gly Ser Gly Asp Ala Val Glu Leu Ser Cys Pro Pro Pro
      50                  55                  60
Gly Gly Gly Pro Met Gly Pro Thr Val Trp Val Lys Asp Gly Thr Gly
65                  70                  75                  80
Leu Val Pro Ser Glu Arg Val Leu Val Gly Pro Gln Arg Leu Gln Val
                 85                  90                  95
Leu Asn Ala Ser His Glu Asp Ser Gly Ala Tyr Ser Cys Arg Gln Arg
                100                 105                 110
Leu Thr Gln Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala
           115                 120                 125
Pro Ser Ser Gly Asp Asp Glu Asp Gly Glu Asp Glu Ala Glu Asp Thr
      130                 135                 140
Gly Val Asp Thr Gly Ala Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp
145                 150                 155                 160
Lys Lys Leu Leu Ala Val Pro Ala Ala Asn Thr Val Arg Phe Arg Cys
                165                 170                 175
Pro Ala Ala Gly Asn Pro Thr Pro Ser Ile Ser Trp Leu Lys Asn Gly
           180                 185                 190
Arg Glu Phe Arg Gly Glu His Arg Ile Gly Gly Ile Lys Leu Arg His
           195                 200                 205
Gln Gln Trp Ser Leu Val Met Glu Ser Val Val Pro Ser Asp Arg Gly
      210                 215                 220
Asn Tyr Thr Cys Val Val Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr
225                 230                 235                 240
Tyr Thr Leu Asp Val Leu Glu Arg Ser Pro His Arg Pro Ile Leu Gln
                245                 250                 255
Ala Gly Leu Pro Ala Asn Gln Thr Ala Val Leu Gly Ser Asp Val Glu
           260                 265                 270
Phe His Cys Lys Val Tyr Ser Asp Ala Gln Pro His Ile Gln Trp Leu
      275                 280                 285
Lys His Val Glu Val Asn Gly Ser Lys Val Gly Pro Asp Gly Thr Pro
      290                 295                 300
Tyr Val Thr Val Leu Lys Val Ser Leu Glu Ser Asn Ala Ser Met Ser
305                 310                 315                 320
Ser Asn Thr Pro Leu Val Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly
                325                 330                 335
Pro Thr Leu Ala Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys
           340                 345                 350
Trp Glu Leu Ser Arg Ala Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu
      355                 360                 365
Gly Cys Phe Gly Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys
      370                 375                 380
Asp Arg Ala Ala Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp
385                 390                 395                 400
Asp Ala Thr Asp Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met
                405                 410                 415
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Met Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala
        420                     425                     430
Cys Thr Gln Gly Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys
        435                     440                     445
Gly Asn Leu Arg Glu Phe Leu Arg Ala Arg Arg Pro Pro Gly Leu Asp
    450                     455                     460
Tyr Ser Phe Asp Thr Cys Lys Pro Pro Glu Glu Gln Leu Thr Phe Lys
465                     470                     475                 480
Asp Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu
                485                     490                     495
Ala Ser Gln Lys Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu
                500                     505                     510
Val Thr Glu Asp Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg
        515                     520                     525
Asp Val His Asn Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu
    530                     535                     540
Pro Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr
545                     550                     555                 560
His Gln Ser Asp Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile Phe
                565                     570                     575
Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe
                580                     585                     590
Lys Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys Thr
                595                     600                     605
His Asp Leu Tyr Met Ile Met Arg Glu Cys Trp His Ala Ala Pro Ser
    610                     615                     620
Gln Arg Pro Thr Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Val Leu
625                     630                     635                 640
Thr Val Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser Ala Pro Phe Glu
                645                     650                     655
Gln Tyr Ser Pro Gly Gly Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly
                660                     665                     670
Asp Asp Ser Val Phe Ala His Asp Leu Leu Pro Pro Ala Pro Pro Ser
                675                     680                     685
Ser Gly Gly Ser Arg Thr
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<210> 7
<211> 2409
<212> DNA
<213> Bos taurus FGFR3IIIc

<400> 7
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gccctcgggt ccccgggcgt ggagccccgc gtcgcgcgga gagcggcaga ggtcccgggc 120
cccgagccca gcccgcagga gcgggccttt ggcagcgggg acaccgtgga gctgagctgc 180
cgcttgccgg cggggggtgcc cacagagccc accgtctggg tgaaggacgg cgtgggcctg 240
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gaggacgccg gagcctacag ctgccgccag cgcctctccc agcggctgct gtgcctcttc 360
agcgtgcgcg tgacagatgc tccgtcctca ggggatgacg agggtgggga cgacgaggcc 420
gaggacacag ctggggcccc ttactggacg cggcctgagc ggatggacaa gaagctgcta 480
gcggtgccgg ccgccaacac ggttcgcttc cgctgcccag ctgctggcaa ccccacgcca 540
tccatcacct ggctgaagaa cggcaaggag ttccggggcg agcaccgcat cggggggaatc 600
aaactgcggc agcagcagtg gagcctggtc atggagagcg tggtgccctc ggaccgcggc 660
aactacacgt gcgtcgtgga gaacaagttc ggcagaatcc agcagaccta caccctggac 720
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2400
cggacgtga
2409
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<210> 8

11

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<211> 802
<212> PRT
<213> Bos taurus FGFR3IIIc

<400> 8
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Met Thr Gly Ala Ala Leu Gly Ser Pro Gly Val Glu Pro Arg Val Ala
               20                  25                  30
Arg Arg Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Pro Gln Glu Arg
          35                  40                  45
Ala Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys Arg Leu Pro Ala
       50                  55                  60
Gly Val Pro Thr Glu Pro Thr Val Trp Val Lys Asp Gly Val Gly Leu
65                  70                  75                  80
Ala Pro Ser Asp Arg Val Leu Val Gly Pro Gln Arg Leu Gln Val Leu
               85                  90                  95
Asn Ala Ser His Glu Asp Ala Gly Ala Tyr Ser Cys Arg Gln Arg Leu
              100                 105                 110
Ser Gln Arg Leu Leu Cys Leu Phe Ser Val Arg Val Thr Asp Ala Pro
              115                 120                 125
Ser Ser Gly Asp Asp Glu Gly Gly Asp Asp Glu Ala Glu Asp Thr Ala
              130                 135                 140
Gly Ala Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu
145                 150                 155                 160
Ala Val Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly
              165                 170                 175
Asn Pro Thr Pro Ser Ile Thr Trp Leu Lys Asn Gly Lys Glu Phe Arg
              180                 185                 190
Gly Glu His Arg Ile Gly Gly Ile Lys Leu Arg Gln Gln Gln Trp Ser
              195                 200                 205
Leu Val Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys
              210                 215                 220
Val Val Glu Asn Lys Phe Gly Arg Ile Gln Gln Thr Tyr Thr Leu Asp
225                 230                 235                 240
Val Leu Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro
              245                 250                 255
Ala Asn Gln Thr Ala Val Leu Gly Ser Asp Val Glu Phe His Cys Lys
              260                 265                 270
Val Tyr Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu
              275                 280                 285
Val Asn Gly Ser Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val
              290                 295                 300
Leu Lys Thr Ala Gly Ala Asn Thr Thr Asp Lys Glu Leu Glu Val Leu
305                 310                 315                 320
Ser Leu Arg Asn Val Thr Phe Glu Asp Ala Gly Glu Tyr Thr Cys Leu
              325                 330                 335
Ala Gly Asn Ser Ile Gly Phe Ser His His Ser Ala Trp Leu Val Val
              340                 345                 350
Leu Pro Ala Glu Glu Glu Leu Val Glu Ala Gly Glu Ala Gly Gly Val
              355                 360                 365
Phe Ala Gly Val Leu Ser Tyr Gly Leu Gly Phe Leu Leu Phe Ile Leu
       370                 375                 380
Ala Val Ala Ala Val Thr Leu Tyr Arg Leu Arg Ser Pro Pro Lys Lys
385                 390                 395                 400
Gly Leu Gly Ser Pro Ala Val His Lys Val Ser Arg Phe Pro Leu Lys
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12

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Arg Gln Val Ser Leu Glu Ser Ser Ser Ser Met Ser Ser Asn Thr Pro
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Leu Val Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly Pro Thr Leu Ala
            435                      440                      445
Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser
            450                      455                      460
Arg Ala Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly
465                      470                      475                      480
Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Ala Ala
                    485                      490                      495
Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp
                    500                      505                      510
Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile
            515                      520                      525
Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly
            530                      535                      540
Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg
545                      550                      555                      560
Glu Tyr Leu Arg Ala Arg Arg Pro Pro Gly Thr Asp Tyr Ser Phe Asp
                    565                      570                      575
Thr Cys Arg Leu Pro Glu Glu Gln Leu Thr Phe Lys Asp Leu Val Ser
            580                      585                      590
Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys
            595                      600                      605
Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp
            610                      615                      620
Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn
625                      630                      635                      640
Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp
                    645                      650                      655
Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp
                    660                      665                      670
Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly
            675                      680                      685
Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys
            690                      695                      700
Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys Thr His Asp Leu Tyr
705                      710                      715                      720
Met Ile Met Arg Glu Cys Trp His Ala Ala Pro Ser Gln Arg Pro Thr
                    725                      730                      735
Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Val Leu Thr Val Thr Ser
            740                      745                      750
Thr Asp Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro
            755                      760                      765
Gly Gly Gln Asp Thr Pro Ser Ser Gly Ser Ser Gly Asp Asp Ser Val
            770                      775                      780
Phe Ala His Asp Leu Leu Pro Pro Ala Pro Ser Gly Ser Gly Gly Ser
785                      790                      795                      800
Arg Thr
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<210> 9
<211> 2409
<212> DNA

<213> Mus musculus FGFR3IIIb

<400> 9

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gatgcagggg tctacagctg ccagcaccgg ctcactcggc gtgtgctgtg ccacttcagt 360
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gacacagggg ctccttattg gactcgcccg gagcgaatgg ataagaaact gctggctgtg 480
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1560
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2040
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2280
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2340
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2400
cggacgtga
2409
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<210> 10
<211> 802
<212> PRT
<213> Mus musculus FGFR3IIIb

<400> 10
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Gly Ala Thr Ser Glu Pro Pro Gly Pro Glu Gln Arg Val Val Arg Arg
            20                  25                  30
Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Gln Gln Glu Gln Val Ala
            35                  40                  45
Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys His Pro Pro Gly Gly
    50                  55                  60
Ala Pro Thr Gly Pro Thr Val Trp Ala Lys Asp Gly Thr Gly Leu Val
65                  70                  75                  80
Ala Ser His Arg Ile Leu Val Gly Pro Gln Arg Leu Gln Val Leu Asn
                85                  90                  95
Ala Ser His Glu Asp Ala Gly Val Tyr Ser Cys Gln His Arg Leu Thr
                100                 105                 110
Arg Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala Pro Ser
            115                 120                 125
Ser Gly Asp Asp Glu Asp Gly Glu Asp Val Ala Glu Asp Thr Gly Ala
    130                 135                 140
Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu Ala Val
145                 150                 155                 160
Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro
                165                 170                 175
Thr Pro Ser Ile Ser Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu
                180                 185                 190
His Arg Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val
            195                 200                 205
Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val
            210                 215                 220
Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr Tyr Thr Leu Asp Val Leu
225                 230                 235                 240
Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn
                245                 250                 255
Gln Thr Ala Ile Leu Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr
                260                 265                 270
Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn
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15

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                275                    280                    285
Gly Ser Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys
    290                    295                    300
Ser Trp Ile Ser Glu Asn Val Glu Ala Asp Ala Arg Leu Arg Leu Ala
305                    310                    315                    320
Asn Val Ser Glu Arg Asp Gly Gly Glu Tyr Leu Cys Arg Ala Thr Asn
                325                    330                    335
Phe Ile Gly Val Ala Glu Lys Ala Phe Trp Leu Arg Val His Gly Pro
                340                    345                    350
Gln Ala Ala Glu Glu Glu Leu Met Glu Thr Asp Glu Ala Gly Ser Val
                355                    360                    365
Tyr Ala Gly Val Leu Ser Tyr Gly Val Val Phe Phe Leu Phe Ile Leu
    370                    375                    380
Val Val Ala Ala Val Ile Leu Cys Arg Leu Arg Ser Pro Pro Lys Lys
385                    390                    395                    400
Gly Leu Gly Ser Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys
                405                    410                    415
Arg Gln Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro
                420                    425                    430
Leu Val Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly Pro Val Leu Ala
                435                    440                    445
Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser
    450                    455                    460
Arg Thr Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly
465                    470                    475                    480
Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Thr Ala
                485                    490                    495
Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp
                500                    505                    510
Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile
                515                    520                    525
Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly
                530                    535                    540
Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg
545                    550                    555                    560
Glu Phe Leu Arg Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp
                565                    570                    575
Ala Cys Arg Leu Pro Glu Glu Gln Leu Thr Cys Lys Asp Leu Val Ser
                580                    585                    590
Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys
                595                    600                    605
Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp
    610                    615                    620
Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn
625                    630                    635                    640
Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp
                645                    650                    655
Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp
                660                    665                    670
Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly
    675                    680                    685
Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys
    690                    695                    700
Glu Gly His Arg Met Asp Lys Pro Ala Ser Cys Thr His Asp Leu Tyr
705                    710                    715                    720
Met Ile Met Arg Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr
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16

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                    725                    730                     735
Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Ile Leu Thr Val Thr Ser
            740                    745                     750
Thr Asp Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro
        755                    760                     765
Gly Gly Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly Asp Asp Ser Val
    770                    775                     780
Phe Thr His Asp Leu Leu Pro Pro Gly Pro Pro Ser Asn Gly Gly Pro
785                    790                     795                     800
Arg Thr
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<210> 11
<211> 2403
<212> DNA
<213> Mus musculus FGFR3IIIc

<400> 11
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cctcctggag gtgcccccac agggcccacg gtctgggcta aggatggtac aggtctggtg 240
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gatgcagggg tctacagctg ccagcaccgg ctcactcggc gtgtgctgtg ccacttcagt 360
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ctatccagga cccggctgac acttggtaag cctcttggag aaggctgctt ggacaggtg 1440
gtcatggcag aagctattgg catcgacaag gaccgtactg ccaagcctgt caccgtggcc 1500
gtgaagatgc tgaaagatga tgcgactgac aaggacctgt cggacctggt atctgagatg 1560
```

```
gagatgatga aaatgattgg caagcacaag aacatcatta acctgctggg ggcgtgcaca
1620
cagggtgggc ccctgtatgt gctggtggag tacgcagcca agggcaatct ccgggagttc
1680
cttcgggcgc ggcggcctcc aggcatggac tactcctttg atgcctgcag gctgccagag
1740
gaacagctca cctgcaagga tctagtgtcc tgtgcctacc aggtggcacg gggcatggaa
1800
tacttggctt ctcagaagtg tattcacaga gacttggctg ccagaaacgt cctggtgacc
1860
gaggacaatg tgatgaagat tgcggacttt ggcctggctc gagatgtgca caacctggac
1920
tactacaaga agaccacaaa tggccggcta cctgtgaagt ggatggcacc agaggccctt
1980
tttgaccgag tctacaccca ccagagtgat gtttggtctt ttggtgtcct cctctgggag
2040
atctttacgc tggggggctc accgtatcct ggcatcccag tggaagagct tttcaagctg
2100
ttgaaagagg ccaccgcat ggacaagcca gccagctgca cacatgacct gtacatgatc
2160
atgcgggaat gttggcatgc ggtgccttca cagaggccca ccttcaagca gttggtagag
2220
gatttagacc gcatcctcac tgtgacatca accgacgagt acttggacct ctccgtgccg
2280
tttgagcagt actcgccagg tggccaggac acgcctagct ccagctcgtc cggagatgac
2340
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2400
tga
2403


<210> 12
<211> 800
<212> PRT
<213> Mus musculus FGFR3IIIc

<400> 12
Met Val Val Pro Ala Cys Val Leu Val Phe Cys Val Ala Val Val Ala
 1               5                   10                  15
Gly Ala Thr Ser Glu Pro Pro Gly Pro Glu Gln Arg Val Val Arg Arg
            20                  25                  30
Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Gln Gln Glu Gln Val Ala
        35                  40                  45
Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys His Pro Pro Gly Gly
    50                  55                  60
Ala Pro Thr Gly Pro Thr Val Trp Ala Lys Asp Gly Thr Gly Leu Val
65                  70                  75                  80
Ala Ser His Arg Ile Leu Val Gly Pro Gln Arg Leu Gln Val Leu Asn
                85                  90                  95
Ala Ser His Glu Asp Ala Gly Val Tyr Ser Cys Gln His Arg Leu Thr
            100                 105                 110
Arg Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala Pro Ser
        115                 120                 125
Ser Gly Asp Asp Glu Asp Gly Glu Asp Val Ala Glu Asp Thr Gly Ala
    130                 135                 140
Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu Ala Val
```

```
          145                     150                     155                     160
Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro
                    165                     170                     175
Thr Pro Ser Ile Ser Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu
                    180                     185                     190
His Arg Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val
                    195                     200                     205
Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val
    210                     215                     220
Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr Tyr Thr Leu Asp Val Leu
225                     230                     235                     240
Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn
                    245                     250                     255
Gln Thr Ala Ile Leu Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr
                    260                     265                     270
Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn
                    275                     280                     285
Gly Ser Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys
    290                     295                     300
Thr Ala Gly Ala Asn Thr Thr Asp Lys Glu Leu Glu Val Leu Ser Leu
305                     310                     315                     320
His Asn Val Thr Phe Glu Asp Ala Gly Glu Tyr Thr Cys Leu Ala Gly
                    325                     330                     335
Asn Ser Ile Gly Phe Ser His His Ser Ala Trp Leu Val Val Leu Pro
                    340                     345                     350
Ala Glu Glu Glu Leu Met Glu Thr Asp Glu Ala Gly Ser Val Tyr Ala
                    355                     360                     365
Gly Val Leu Ser Tyr Gly Val Val Phe Phe Leu Phe Ile Leu Val Val
    370                     375                     380
Ala Ala Val Ile Leu Cys Arg Leu Arg Ser Pro Pro Lys Lys Gly Leu
385                     390                     395                     400
Gly Ser Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys Arg Gln
                    405                     410                     415
Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro Leu Val
                    420                     425                     430
Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly Pro Val Leu Ala Asn Val
                    435                     440                     445
Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser Arg Thr
    450                     455                     460
Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly Gln Val
465                     470                     475                     480
Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Thr Ala Lys Pro
                    485                     490                     495
Val Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp Lys Asp
                    500                     505                     510
Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile Gly Lys
                    515                     520                     525
His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly Gly Pro
    530                     535                     540
Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg Glu Phe
545                     550                     555                     560
Leu Arg Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp Ala Cys
                    565                     570                     575
Arg Leu Pro Glu Glu Gln Leu Thr Cys Lys Asp Leu Val Ser Cys Ala
                    580                     585                     590
Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys Cys Ile
```

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Fernandez-Salas, E. et al., Botulinum Toxin Screening Assays

```
            595                      600                      605
His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp Asn Val
    610                      615                      620
Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn Leu Asp
625                      630                      635                      640
Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala
                645                      650                      655
Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp Val Trp
                660                      665                      670
Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro
                675                      680                      685
Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly
    690                      695                      700
His Arg Met Asp Lys Pro Ala Ser Cys Thr His Asp Leu Tyr Met Ile
705                      710                      715                      720
Met Arg Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr Phe Lys
                725                      730                      735
Gln Leu Val Glu Asp Leu Asp Arg Ile Leu Thr Val Thr Ser Thr Asp
                740                      745                      750
Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro Gly Gly
                755                      760                      765
Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly Asp Asp Ser Val Phe Thr
    770                      775                      780
His Asp Leu Leu Pro Pro Gly Pro Pro Ser Asn Gly Gly Pro Arg Thr
785                      790                      795                      800
```

```
<210> 13
<211> 2349
<212> DNA
<213> Mus musculus FGFR3III-delAcid
```

```
<400> 13
atggtagtcc cggcctgcgt gctagtgttc tgcgtggcgg tcgtggctgg agctacttcc 60
gagcctcctg gtccagagca gcgagttgtg cggagagcgg cagaggttcc agggcctgaa 120
cctagccagc aggagcaggt ggccttcggc agtggggaca ccgtggagct gagctgccat 180
cctcctggag gtgcccccac agggcccacg gtctgggcta aggatggtac aggtctggtg 240
gcctcccacc gcatcctggt ggggcctcag aggctgcaag tgctaaatgc ctcccacgaa 300
gatgcagggg tctacagctg ccagcaccgg ctcactcggc gtgtgctgtg ccacttcagt 360
gtgcgtgtaa caggggctcc ttattggact cgcccggagc gaatggataa gaaactgctg 420
gctgtgccag ccgcaaacac tgtccgcttc cgctgcccag ctgctggcaa ccctaccccc 480
tccatctcct ggctgaagaa tggcaaagaa ttccgagggg agcatcgcat ggggggcatc 540
aagctccggc accagcagtg gagcttggtc atggaaagtg tggtaccctc cgatcgtggc 600
aactatacct gtgtagttga aacaagtttt ggcagcatcc ggcagacata cacactggat 660
gtgctggagc gctccccaca ccggcccatc ctgcaggctg gctgccggc aaccagaca 720
gccattctag gcagtgacgt ggagttccac tgcaaggtgt acagcgatgc acagccacac 780
atccagtggc tgaagcacgt ggaagtgaac ggcagcaagg tgggccctga cggcacgccc 840
tacgtcactg tactcaagac tgcaggcgct aacaccaccg acaaggagct agaggttctg 900
tccttgcaca atgtcacctt tgaggacgcg ggggagtaca cctgcctggc gggcaattct 960
attgggtttt cccatcactc tgcgtggctg gtggtgctgc agctgagga ggagctgatg
1020
gaaactgatg aggctggcag cgtgtacgca ggcgtcctca gctacggggt ggtcttcttc
1080
ctcttcatcc tggtggtggc agctgtgata ctctgccgcc tgcgcagtcc cccaaagaag
1140
```

```
ggcttgggct cgcccaccgt gcacaaggtc tctcgcttcc cgcttaagcg acaggtgtcc
1200
ttggaatcta actcctctat gaactccaac acaccccttg tccggattgc ccggctgtcc
1260
tcaggagaag gtcctgttct ggccaatgtt tctgaacttg agctgcctgc tgaccccaag
1320
tgggagctat ccaggacccg gctgacactt ggtaagcctc ttggagaagg ctgctttgga
1380
caggtggtca tggcagaagc tattggcatc gacaaggacc gtactgccaa gcctgtcacc
1440
gtggccgtga agatgctgaa agatgatgcg actgacaagg acctgtcgga cctggtatct
1500
gagatggaga tgatgaaaat gattggcaag cacaagaaca tcattaacct gctggggcg
1560
tgcacacagg gtgggcccct gtatgtgctg gtggagtacg cagccaaggg caatctccgg
1620
gagttccttc gggcgcggcg gcctccaggc atggactact cctttgatgc ctgcaggctg
1680
ccagaggaac agctcacctg caaggatcta gtgtcctgtg cctaccaggt ggcacggggc
1740
atggaatact ggcttctca gaagtgtatt cacagagact ggctgccag aaacgtcctg
1800
gtgaccgagg acaatgtgat gaagattgcg actttggcc tggctcgaga tgtgcacaac
1860
ctggactact acaagaagac cacaaatggc cggctacctg tgaagtggat ggcaccagag
1920
gccctttttg accgagtcta cacccaccag agtgatgttt ggtcttttgg tgtcctcctc
1980
tgggagatct ttacgctggg gggctcaccg tatcctggca tcccagtgga agagctttc
2040
aagctgttga agagggcca ccgcatggac aagccagcca gctgcacaca tgacctgtac
2100
atgatcatgc gggaatgttg gcatgcggtg ccttcacaga ggcccacctt caagcagttg
2160
gtagaggatt tagaccgcat cctcactgtg acatcaaccg acgagtactt ggacctctcc
2220
gtgccgtttg agcagtactc gccaggtggc caggacacgc ctagctccag ctcgtccgga
2280
gatgactcgg tgttcaccca tgacctgcta cccccaggtc cacccagtaa cggggacct
2340
cggacgtga
2349
```

```
<210> 14
<211> 782
<212> PRT
<213> Mus musculus FGFR3III-delAcid

<400> 14
Met Val Val Pro Ala Cys Val Leu Val Phe Cys Val Ala Val Val Ala
 1               5                   10                  15
Gly Ala Thr Ser Glu Pro Pro Gly Pro Glu Gln Arg Val Val Arg Arg
                20                  25                  30
Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Gln Gln Glu Gln Val Ala
        35                  40                  45
Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys His Pro Pro Gly Gly
```

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```
     50                        55                        60
Ala Pro Thr Gly Pro Thr Val Trp Ala Lys Asp Gly Thr Gly Leu Val
65                        70                        75                        80
Ala Ser His Arg Ile Leu Val Gly Pro Gln Arg Leu Gln Val Leu Asn
                    85                        90                        95
Ala Ser His Glu Asp Ala Gly Val Tyr Ser Cys Gln His Arg Leu Thr
                    100                       105                       110
Arg Arg Val Leu Cys His Phe Ser Val Arg Val Thr Gly Ala Pro Tyr
                    115                       120                       125
Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu Ala Val Pro Ala
          130                       135                       140
Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro Thr Pro
145                       150                       155                       160
Ser Ile Ser Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu His Arg
                    165                       170                       175
Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val Met Glu
                    180                       185                       190
Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val Glu Asn
          195                       200                       205
Lys Phe Gly Ser Ile Arg Gln Thr Tyr Thr Leu Asp Val Leu Glu Arg
          210                       215                       220
Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn Gln Thr
225                       230                       235                       240
Ala Ile Leu Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr Ser Asp
                    245                       250                       255
Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn Gly Ser
                    260                       265                       270
Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys Thr Ala
          275                       280                       285
Gly Ala Asn Thr Thr Asp Lys Glu Leu Glu Val Leu Ser Leu His Asn
          290                       295                       300
Val Thr Phe Glu Asp Ala Gly Glu Tyr Thr Cys Leu Ala Gly Asn Ser
305                       310                       315                       320
Ile Gly Phe Ser His His Ser Ala Trp Leu Val Val Leu Pro Ala Glu
                    325                       330                       335
Glu Glu Leu Met Glu Thr Asp Glu Ala Gly Ser Val Tyr Ala Gly Val
                    340                       345                       350
Leu Ser Tyr Gly Val Val Phe Phe Leu Phe Ile Leu Val Val Ala Ala
                    355                       360                       365
Val Ile Leu Cys Arg Leu Arg Ser Pro Pro Lys Lys Gly Leu Gly Ser
          370                       375                       380
Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys Arg Gln Val Ser
385                       390                       395                       400
Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro Leu Val Arg Ile
                    405                       410                       415
Ala Arg Leu Ser Ser Gly Glu Gly Pro Val Leu Ala Asn Val Ser Glu
                    420                       425                       430
Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser Arg Thr Arg Leu
          435                       440                       445
Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly Gln Val Val Met
          450                       455                       460
Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Thr Ala Lys Pro Val Thr
465                       470                       475                       480
Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp Lys Asp Leu Ser
                    485                       490                       495
Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile Gly Lys His Lys
```

```
                 500                      505                      510
Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly Gly Pro Leu Tyr
        515                      520                      525
Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg Glu Phe Leu Arg
        530                      535                      540
Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp Ala Cys Arg Leu
545                      550                      555                      560
Pro Glu Glu Gln Leu Thr Cys Lys Asp Leu Val Ser Cys Ala Tyr Gln
                 565                      570                      575
Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys Cys Ile His Arg
                 580                      585                      590
Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp Asn Val Met Lys
        595                      600                      605
Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn Leu Asp Tyr Tyr
        610                      615                      620
Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala Pro Glu
625                      630                      635                      640
Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp Val Trp Ser Phe
                 645                      650                      655
Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro Tyr Pro
                 660                      665                      670
Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly His Arg
        675                      680                      685
Met Asp Lys Pro Ala Ser Cys Thr His Asp Leu Tyr Met Ile Met Arg
        690                      695                      700
Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr Phe Lys Gln Leu
705                      710                      715                      720
Val Glu Asp Leu Asp Arg Ile Leu Thr Val Thr Ser Thr Asp Glu Tyr
                 725                      730                      735
Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro Gly Gly Gln Asp
                 740                      745                      750
Thr Pro Ser Ser Ser Ser Ser Gly Asp Asp Ser Val Phe Thr His Asp
        755                      760                      765
Leu Leu Pro Pro Gly Pro Pro Ser Asn Gly Gly Pro Arg Thr
        770                      775                      780
```

```
<210> 15
<211> 2409
<212> DNA
<213> Rattus norvegicus FGFR3IIIb

<400> 15
atggtagtcc cggcctgcgt gctagtgttc tgcgtggcgg tcgtggctgg agttacttcc 60
gagcctcccg tccagagca gcgagttggt cggagagcgg cagaggttcc agggcctgaa 120
cctagccagc aggagcaggt ggccttcggc agtggggaca ctgtggagct gagctgccat 180
ccgcctggag gtgcccccac aggcccccact ctctgggcta aggacggtgt ggggctggtg 240
gcctcccacc gtatcctggt ggggcctcag aggcttcaag tgctaaacgc cacccatgag 300
gatgctgggg tctacagctg ccagcagcgg ctaacccggc gtgtgctgtg ccactttagt 360
gtgcgtgtaa cagatgctcc gtcctcagga gatgacgaag atggggagga cgtggctgaa 420
gacacagggg ctccttactg gactcgaccg gagcgtatgg ataagaaact gctggctgtg 480
ccagctgcaa acactgtacg cttccgctgc ccagctgctg caaccccac ccctccatc 540
ccctggctga agaacggcaa agaattccga ggggagcacc gcattggggg cattaagctc 600
cggcaccagc agtggagctt ggtcatggaa agtgtggtgc cctctgaccg cggcaattac 660
acctgcgtgg ttgagaacaa gtttggcagc atccggcaga cgtacaccct ggatgtgctg 720
gagcgctccc cacaccggcc catcctgcag gctgggctgc agccaaccaa gacagccgtt 780
```

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```
ctgggcagtg acgtggagtt ccactgcaag gtgtacagcg acgcacagcc acacatccag 840
tggctgaagc acgtggaggt gaatgggagc aaggtgggcc ctgacggcac gccctacgtc 900
actgtactca agtcctggat cagtgagaat gtggaggcag acgcacgcct ccgcctggcc 960
aatgtgtcgg agcgggacgg gggcgagtac ctctgtcgag ccaccaattt cataggcgtg
1020
gccgagaagg ccttttggct tcgtgttcac gggccccaag cagccgagga ggagctgatg
1080
gaagttgacg aggctggcag cgtgtacgcg ggtgtcctca gctacggggt gggcttcttc
1140
ctcttcatcc tggtggtggc ggcagtgacg ctctgccgtc tgcgcagtcc cccaaagaag
1200
ggcctgggct cgcccaccgt gcacaaggtc tctcgcttcc cgcttaagcg acaggtgtcc
1260
ttggagtcta attcctctat gaactccaac acacctctcg tccggattgc ccggctgtcc
1320
tcaggagaag gtcctgtcct ggccaatgtt tctgaacttg agctgcctgc tgaccccaag
1380
tgggagctat ccaggacccg gctgacactc ggtaagcctc ttggagaagg ctgctttgga
1440
caggttgtca tggcagaagc tattggcatc gacaaggacc gcactgccaa gcctgtcacc
1500
gtggccgtga agatgctgaa agatgatgcg actgacaagg acctgtcgga cctggtgtct
1560
gagatggaga tgatgaaaat gattggcaag cacaagaaca tcattaacct gttgggggcc
1620
tgcacccagg gtgggcccct gtatgtgctg gtggagtatg cagccaaggg caacctgcga
1680
gagttcctcc gggcacggcg gcctccaggc atggattact cctttgatgc ctgcaggctg
1740
ccagaggaac agctcacctg caaggatctg gtgtcctgtg cctaccaggt ggcacggggc
1800
atggagtact tggcttccca gaagtgtatt cacagagacc tggctgccag aaacgtgctg
1860
gtgactgagg acaatgtgat gaagattgca gactttggcc tggcccgaga tgtgcacaac
1920
ctggattact acaagaagac cacaaatggc cggctacctg tgaagtggat ggcaccagag
1980
gccctttttg accgagtcta cacccatcag agtgatgtct ggtcctttgg tgtcctcctc
2040
tgggagatct ttacactggg tgggtcacca tatcctggca tcccagtgga agagcttttc
2100
aagctgttga agagggcca ccgcatggac aagccagcca actgcacaca tgacctgtac
2160
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2220
gtagaggatt tagaccgcat cctcacggtg acatcaactg acgagtactt ggacctctcg
2280
gtgccatttg aacagtactc gccaggtggc caagatactc ctagctccag ctcgtccggg
2340
gacgactctg tgttcaccca tgacctgcta cccccaggcc cacccagcaa tggggggacct
2400
cggacgtga
2409


<210> 16
<211> 802
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<212> PRT
<213> Rattus norvegicus FGFR3IIIb

<400> 16
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Met Val Val Pro Ala Cys Val Leu Val Phe Cys Val Ala Val Val Ala
 1               5                  10                  15
Gly Val Thr Ser Glu Pro Pro Gly Pro Glu Gln Arg Val Gly Arg Arg
            20                  25                  30
Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Gln Gln Glu Gln Val Ala
            35                  40                  45
Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys His Pro Pro Gly Gly
        50                  55                  60
Ala Pro Thr Gly Pro Thr Leu Trp Ala Lys Asp Gly Val Gly Leu Val
65                  70                  75                  80
Ala Ser His Arg Ile Leu Val Gly Pro Gln Arg Leu Gln Val Leu Asn
                85                  90                  95
Ala Thr His Glu Asp Ala Gly Val Tyr Ser Cys Gln Gln Arg Leu Thr
            100                 105                 110
Arg Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala Pro Ser
            115                 120                 125
Ser Gly Asp Asp Glu Asp Gly Glu Asp Val Ala Glu Asp Thr Gly Ala
            130                 135                 140
Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu Ala Val
145                 150                 155                 160
Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro
                165                 170                 175
Thr Pro Ser Ile Pro Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu
                180                 185                 190
His Arg Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val
            195                 200                 205
Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val
    210                 215                 220
Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr Tyr Thr Leu Asp Val Leu
225                 230                 235                 240
Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn
                245                 250                 255
Gln Thr Ala Val Leu Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr
            260                 265                 270
Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn
    275                 280                 285
Gly Ser Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys
    290                 295                 300
Ser Trp Ile Ser Glu Asn Val Glu Ala Asp Ala Arg Leu Arg Leu Ala
305                 310                 315                 320
Asn Val Ser Glu Arg Asp Gly Gly Glu Tyr Leu Cys Arg Ala Thr Asn
                325                 330                 335
Phe Ile Gly Val Ala Glu Lys Ala Phe Trp Leu Arg Val His Gly Pro
            340                 345                 350
Gln Ala Ala Glu Glu Glu Leu Met Glu Val Asp Glu Ala Gly Ser Val
    355                 360                 365
Tyr Ala Gly Val Leu Ser Tyr Gly Val Gly Phe Phe Leu Phe Ile Leu
    370                 375                 380
Val Val Ala Ala Val Thr Leu Cys Arg Leu Arg Ser Pro Pro Lys Lys
385                 390                 395                 400
Gly Leu Gly Ser Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys
            405                 410                 415
```

```
Arg Gln Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro
        420                     425                 430
Leu Val Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly Pro Val Leu Ala
        435                     440                 445
Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser
    450                 455                 460
Arg Thr Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly
465                 470                 475                 480
Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Thr Ala
            485                 490                 495
Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp
            500                 505                 510
Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile
        515                 520                 525
Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly
    530                 535                 540
Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg
545                 550                 555                 560
Glu Phe Leu Arg Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp
            565                 570                 575
Ala Cys Arg Leu Pro Glu Glu Gln Leu Thr Cys Lys Asp Leu Val Ser
            580                 585                 590
Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys
        595                 600                 605
Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp
    610                 615                 620
Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn
625                 630                 635                 640
Leu Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp
            645                 650                 655
Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp
            660                 665                 670
Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly
        675                 680                 685
Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys
    690                 695                 700
Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys Thr His Asp Leu Tyr
705                 710                 715                 720
Met Ile Met Arg Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr
            725                 730                 735
Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Ile Leu Thr Val Thr Ser
            740                 745                 750
Thr Asp Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro
        755                 760                 765
Gly Gly Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly Asp Asp Ser Val
    770                 775                 780
Phe Thr His Asp Leu Leu Pro Pro Gly Pro Pro Ser Asn Gly Gly Pro
785                 790                 795                 800
Arg Thr
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<210> 17
<211> 2403
<212> DNA
<213> Rattus norvegicus FGFR3IIIc

26

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<400> 17
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cctagccagc aggagcaggt ggccttcggc agtggggaca ctgtggagct gagctgccat 180
ccgcctggag gtgcccccac aggccccact ctctgggcta aggacggtgt ggggctggtg 240
gcctccaccc gtatcctggt ggggcctcag aggcttcaag tgctaaacgc cacccatgag 300
gatgctgggg tctacagctg ccagcagcgg ctaacccggc gtgtgctgtg ccactttagt 360
gtgcgtgtaa cagatgctcc gtcctcagga gatgacgaag atggggagga cgtggctgaa 420
gacacagggg ctccttactg gactcgaccg gagcgtatgg ataagaaact gctggctgtg 480
ccagctgcaa acactgtacg cttccgctgc ccagctgctg caaccccac cccctccatc 540
ccctggctga agaacggcaa agaattccga ggggagcacc gcattggggg cattaagctc 600
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acctgcgtgg ttgagaacaa gtttggcagc atccggcaga cgtacaccct ggatgtgctg 720
gagcgctccc acaccggcc catcctgcag gctgggctgc agccaacca gacagccgtt 780
ctgggcagtg acgtggagtt ccactgcaag gtgtacagcg acgcacagcc acacatccag 840
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1080
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1920
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1980
tttgaccgag tctacaccca tcagagtgat gtctggtcct ttggtgtcct cctctgggag
2040
atctttacac tgggtgggtc accatatcct ggcatcccag tggaagagct tttcaagctg
2100
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27

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ttgaaagagg gccaccgcat ggacaagcca gccaactgca cacatgacct gtacatgatc
2160
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2280
tttgaacagt actcgccagg tggccaagat actcctagct ccagctcgtc cggggacgac
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2400
tga
2403


<210> 18
<211> 800
<212> PRT
<213> Rattus norvegicus FGFR3IIIc

<400> 18
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Gly Val Thr Ser Glu Pro Pro Gly Pro Glu Gln Arg Val Gly Arg Arg
              20                  25                  30
Ala Ala Glu Val Pro Gly Pro Glu Pro Ser Gln Gln Glu Gln Val Ala
          35                  40                  45
Phe Gly Ser Gly Asp Thr Val Glu Leu Ser Cys His Pro Pro Gly Gly
      50                  55                  60
Ala Pro Thr Gly Pro Thr Leu Trp Ala Lys Asp Gly Val Gly Leu Val
65                  70                  75                  80
Ala Ser His Arg Ile Leu Val Gly Pro Gln Arg Leu Gln Val Leu Asn
                  85                  90                  95
Ala Thr His Glu Asp Ala Gly Val Tyr Ser Cys Gln Gln Arg Leu Thr
              100                 105                 110
Arg Arg Val Leu Cys His Phe Ser Val Arg Val Thr Asp Ala Pro Ser
              115                 120                 125
Ser Gly Asp Asp Glu Asp Gly Glu Asp Val Ala Glu Asp Thr Gly Ala
      130                 135                 140
Pro Tyr Trp Thr Arg Pro Glu Arg Met Asp Lys Lys Leu Leu Ala Val
145                 150                 155                 160
Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro
                  165                 170                 175
Thr Pro Ser Ile Pro Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu
              180                 185                 190
His Arg Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val
              195                 200                 205
Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val
      210                 215                 220
Glu Asn Lys Phe Gly Ser Ile Arg Gln Thr Tyr Thr Leu Asp Val Leu
225                 230                 235                 240
Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn
                  245                 250                 255
Gln Thr Ala Val Leu Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr
              260                 265                 270
Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn
          275                 280                 285
Gly Ser Lys Val Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys
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28

```
         290                           295                           300
Thr Ala Gly Ala Asn Thr Thr Asp Arg Glu Leu Glu Val Leu Ser Leu
305                     310                     315                     320
His Asn Val Thr Phe Glu Asp Ala Gly Glu Tyr Thr Cys Leu Ala Gly
                325                     330                     335
Asn Ser Ile Gly Phe Ser His His Ser Ala Trp Leu Val Val Leu Pro
                340                     345                     350
Ala Glu Glu Glu Leu Met Glu Val Asp Glu Ala Gly Ser Val Tyr Ala
            355                     360                     365
Gly Val Leu Ser Tyr Gly Val Gly Phe Phe Leu Phe Ile Leu Val Val
        370                     375                     380
Ala Ala Val Thr Leu Cys Arg Leu Arg Ser Pro Pro Lys Lys Gly Leu
385                     390                     395                     400
Gly Ser Pro Thr Val His Lys Val Ser Arg Phe Pro Leu Lys Arg Gln
                405                     410                     415
Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro Leu Val
                420                     425                     430
Arg Ile Ala Arg Leu Ser Ser Gly Glu Gly Pro Val Leu Ala Asn Val
            435                     440                     445
Ser Glu Leu Glu Leu Pro Ala Asp Pro Lys Trp Glu Leu Ser Arg Thr
        450                     455                     460
Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly Gln Val
465                     470                     475                     480
Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Arg Thr Ala Lys Pro
                485                     490                     495
Val Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp Lys Asp
                500                     505                     510
Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile Gly Lys
            515                     520                     525
His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Gly Gly Pro
            530                     535                     540
Leu Tyr Val Leu Val Glu Tyr Ala Ala Lys Gly Asn Leu Arg Glu Phe
545                     550                     555                     560
Leu Arg Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp Ala Cys
                565                     570                     575
Arg Leu Pro Glu Glu Gln Leu Thr Cys Lys Asp Leu Val Ser Cys Ala
            580                     585                     590
Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys Cys Ile
        595                     600                     605
His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp Asn Val
        610                     615                     620
Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn Leu Asp
625                     630                     635                     640
Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala
                645                     650                     655
Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp Val Trp
                660                     665                     670
Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro
            675                     680                     685
Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly
            690                     695                     700
His Arg Met Asp Lys Pro Ala Asn Cys Thr His Asp Leu Tyr Met Ile
705                     710                     715                     720
Met Arg Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr Phe Lys
                725                     730                     735
Gln Leu Val Glu Asp Leu Asp Arg Ile Leu Thr Val Thr Ser Thr Asp
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29

```
                 740                      745                      750
Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro Gly Gly
        755                      760                      765
Gln Asp Thr Pro Ser Ser Ser Ser Ser Gly Asp Asp Ser Val Phe Thr
    770                      775                      780
His Asp Leu Leu Pro Pro Gly Pro Pro Ser Asn Gly Gly Pro Arg Thr
785                      790                      795                      800
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<210> 19
<211> 2421
<212> DNA
<213> Gallus gallus FGFR3

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agcgagaccg cctttctgga agagttggtg tttggaagtg gagataccat tgaactttcc 180
tgtaacaccc agagctcttc tgtgtcagtt ttctggttta aagatggtat tgggattgca 240
ccttccaaca gaactcatat tggacaaaaa ctgttgaaga taatcaatgt gtcatatgac 300
gattcggggc tgtacagttg caagccaagg cattccaacg aggtcctggg aaactttaca 360
gtcagagtga cagattcccc ttcgtcaggt gatgatgaag atgatgacga tgagtcagag 420
gatacaggtg tccccttctg gacccggcca gataagatgg aagaagct gctggcagtt 480
cctgccgcca acaccgttcg cttccgatgt ccagcaggtg aaacccaac tcccaccatt 540
tactggctga agaatggcaa agaattcaag ggagagcaca ggatcggggg catcaagttg 600
cgacaccagc agtggagctt ggtgatggag agcgttgtgc cgtcagatcg aggaaactac 660
acctgtgttg tggagaacaa atatggcaat attaggcaca cataccagct tgatgtttta 720
gaacggtcac cccaccgacc aatcctgcaa gcaggactcc ctgccaatca gactgtggtg 780
gtcgggagca atgtggaatt tcactgcaag gtctacagcg atgcccagcc tcatatccag 840
tggctgaaac acgtagaagt caacggcagc aagtatggac ctgatgggac accctatgtc 900
acagtgctga gacggcagg tgttaacaca acggataagg agctagagat tctgtacttg 960
cgaaatgtta cttttgagga tgctggggaa tatacttgtc tcgcagggaa ttctattggg 1020
ttctcacatc actctgcttg gctgacggtg ctaccagcag aggagctgat ggaaatggat 1080
gattcgggct cagtgtacgc tggcattctc agctatggca ctggcttagt cctcttcatc 1140
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accaccactg tacagaaagt ctccaaattt ccactcaaga cagcaggt gtcgttggag 1260
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ttggcacgtt ctcgcctgac cctggggaag ccgcttggtg agggctgttt tggccaagtg 1440
gtgatggcgg aagcaattgg gattgataaa gacaagccaa acaaggccat caccgtggct 1500
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gaaatgatga aaatgattgg gaagcacaaa aacatcatta acctgctcgg tgcttgcacg 1620
caggacggac cgctctacgt gttggttgaa tatgcatcga aggggaactt gcgggaatac 1680
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ctcagggcac gtcgcccacc tggcatggac tattccttcg acacctgcaa gctgcccgag
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1800
tacttggcgt cacagaaatg cattcatcgt gacttggcag ccaggaatgt gttagtcact
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gaggacaatg tgatgaaaat agctgatttt ggccttgcta gagacgttca caacatcgac
1920
tattacaaga aaaccaccaa tggtcggctg cctgtgaaat ggatggctcc agaagcattg
1980
tttgaccggg tctatactca ccagagcgat gtctggtctt ttggagtgct actatgggag
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2100
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2160
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2220
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2280
tttgagcaat actcacccgc tggccaggac acccacagca cctgctcctc aggggacgac
2340
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2400
aatggcgtca tccgcacgtg a
2421
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<210> 20
<211> 806
<212> PRT
<213> Gallus gallus FGFR3

<400> 20
Met Arg Ala Ala Trp Gly Ser Val Trp Cys Leu Cys Leu Ala Ala Ala
 1               5                  10                  15
Val Gly Ala Leu Pro Ala Ala Arg Arg Arg Gly Ala Glu Arg Ser Gly
            20                  25                  30
Gly Gln Ala Ala Glu Tyr Leu Arg Ser Glu Thr Ala Phe Leu Glu Glu
        35                  40                  45
Leu Val Phe Gly Ser Gly Asp Thr Ile Glu Leu Ser Cys Asn Thr Gln
    50                  55                  60
Ser Ser Ser Val Ser Val Phe Trp Phe Lys Asp Gly Ile Gly Ile Ala
65                  70                  75                  80
Pro Ser Asn Arg Thr His Ile Gly Gln Lys Leu Leu Lys Ile Ile Asn
                85                  90                  95
Val Ser Tyr Asp Asp Ser Gly Leu Tyr Ser Cys Lys Pro Arg His Ser
            100                 105                 110
Asn Glu Val Leu Gly Asn Phe Thr Val Arg Val Thr Asp Ser Pro Ser
            115                 120                 125
Ser Gly Asp Asp Glu Asp Asp Asp Glu Ser Glu Asp Thr Gly Val
    130                 135                 140
Pro Phe Trp Thr Arg Pro Asp Lys Met Glu Lys Lys Leu Leu Ala Val
145                 150                 155                 160
Pro Ala Ala Asn Thr Val Arg Phe Arg Cys Pro Ala Gly Gly Asn Pro
                165                 170                 175
Thr Pro Thr Ile Tyr Trp Leu Lys Asn Gly Lys Glu Phe Lys Gly Glu
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31

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              180                      185                      190
His Arg Ile Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val
         195                      200                      205
Met Glu Ser Val Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val
         210                      215                      220
Glu Asn Lys Tyr Gly Asn Ile Arg His Thr Tyr Gln Leu Asp Val Leu
225                      230                      235                      240
Glu Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn
              245                      250                      255
Gln Thr Val Val Val Gly Ser Asn Val Glu Phe His Cys Lys Val Tyr
              260                      265                      270
Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Val Glu Val Asn
              275                      280                      285
Gly Ser Lys Tyr Gly Pro Asp Gly Thr Pro Tyr Val Thr Val Leu Lys
              290                      295                      300
Thr Ala Gly Val Asn Thr Thr Asp Lys Glu Leu Glu Ile Leu Tyr Leu
305                      310                      315                      320
Arg Asn Val Thr Phe Glu Asp Ala Gly Glu Tyr Thr Cys Leu Ala Gly
              325                      330                      335
Asn Ser Ile Gly Phe Ser His His Ser Ala Trp Leu Thr Val Leu Pro
              340                      345                      350
Ala Glu Glu Leu Met Glu Met Asp Asp Ser Gly Ser Val Tyr Ala Gly
              355                      360                      365
Ile Leu Ser Tyr Gly Thr Gly Leu Val Leu Phe Ile Leu Val Leu Val
              370                      375                      380
Ile Val Ile Ile Cys Arg Met Lys Met Pro Asn Lys Lys Ala Met Asn
385                      390                      395                      400
Thr Thr Thr Val Gln Lys Val Ser Lys Phe Pro Leu Lys Arg Gln Gln
              405                      410                      415
Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser Asn Thr Pro Leu Val
              420                      425                      430
Arg Ile Thr Arg Leu Ser Ser Ser Asp Gly Pro Met Leu Ala Asn Val
              435                      440                      445
Ser Glu Leu Glu Leu Pro Pro Asp Pro Lys Trp Glu Leu Ala Arg Ser
              450                      455                      460
Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly Gln Val
465                      470                      475                      480
Val Met Ala Glu Ala Ile Gly Ile Asp Lys Asp Lys Pro Asn Lys Ala
              485                      490                      495
Ile Thr Val Ala Val Lys Met Leu Lys Asp Asp Ala Thr Asp Lys Asp
              500                      505                      510
Leu Ser Asp Leu Val Ser Glu Met Glu Met Met Lys Met Ile Gly Lys
              515                      520                      525
His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys Thr Gln Asp Gly Pro
              530                      535                      540
Leu Tyr Val Leu Val Glu Tyr Ala Ser Lys Gly Asn Leu Arg Glu Tyr
545                      550                      555                      560
Leu Arg Ala Arg Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp Thr Cys
              565                      570                      575
Lys Leu Pro Glu Glu Gln Leu Thr Phe Lys Asp Leu Val Ser Cys Ala
              580                      585                      590
Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys Cys Ile
              595                      600                      605
His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Thr Glu Asp Asn Val
              610                      615                      620
Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp Val His Asn Ile Asp
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625                     630                     635                         640
Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala
                645                     650                     655
Pro Glu Ala Leu Phe Asp Arg Val Tyr Thr His Gln Ser Asp Val Trp
                660                     665                     670
Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro
                675                     680                     685
Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly
        690                     695                     700
His Arg Met Asp Lys Pro Ala Asn Cys Thr His Asp Leu Tyr Met Ile
705                     710                     715                     720
Met Arg Glu Cys Trp His Ala Val Pro Ser Gln Arg Pro Thr Phe Lys
                725                     730                     735
Gln Leu Val Glu Asp Leu Asp Arg Val Leu Thr Met Thr Ser Thr Asp
                740                     745                     750
Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln Tyr Ser Pro Ala Gly
        755                     760                     765
Gln Asp Thr His Ser Thr Cys Ser Ser Gly Asp Asp Ser Val Phe Ala
        770                     775                     780
His Asp Leu Leu Pro Asp Glu Pro Cys Leu Pro Lys His Val Pro Cys
785                     790                     795                     800
Asn Gly Val Ile Arg Thr
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<210> 21
<211> 2484
<212> DNA
<213> Xenopus laevis FGFR3-1

<400> 21
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cgactgccag ttacgctccc tggagaggac agagcaaaca gaaaagcatc agattatctc 180
acggtagaac agcccccatt cgatgagctc atgtttacaa ttggagaaac cattgagttg 240
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gtgccgaaca cagaacaag tacgaggcag ggcctgctga agattatcaa catctcatac 360
gatgactctg ggatatacag ttgcagacta tggcattcta ctgaaattct cgcaatttt 420
accatcagag taacagactt accatcgtcc ggtgatgatg aggatgacga tgatgaaacc 480
gaagacagag agcctcctcg ctggacccaa cctgagaaga tggagaagaa acttattgca 540
gtccctgccg ctaacacaat ccgattccgg tgcccagccg cggggaatcc caccctacc 600
atccattggc ttaagaacg aaaggaattc aggggagagc atcgtattgg tggcatcaaa 660
ctccgacatc agcagtggag cctcgttatg gagagcgtag ttccatcgga taaaggcaac 720
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gtgtttggga gcgacgtgga attccactgc aaagtctaca gtgacgcaca gccacatatt 900
cagtggctta aacacgtgga agtgaatggc agcaagtacg cccagacgg agatccttac 960
gtcacagtgc tgcaatcttt caccaatggc actgaagtcg attctacctt aagtctaaaa
1020
aatgtgaccg agacccatga aggacagtat gtgtgtagag ccaacaattt cataggagta
1080
gccgaggcat cctttggt ccacatttac aaaccagcac cagcagaacc agtggagaag
1140
ccagcaacca catcttccag ctccatcacc gttcttattg tggtcacctc gactattgtg
1200
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1260
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1320
gagtccaact cttctatgaa ttccaacacc ccgctggtga ggatcactca cctgtcctcc
1380
agcgacggaa ccatgttggc taatgtgtcg gagctcggcc tgcccctgga tcccaagtgg
1440
gagttattga gatcaaggct gactttagga aagccccttg gagaaggctg ctttggtcaa
1500
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1560
gctgtaaaga tgcttaaaga tgatgctaca gataaagatc tctccgatct ggtctcggag
1620
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1680
actcaggatg gaccactgta cgttcttgtg gaatatgcat ccaaagggaa cctcagggag
1740
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1800
gctgagcagc tgacgttcaa ggacctcgtt tcttgcgcct accaggtagc tcgtggcatg
1860
gagtacctgg cgtcgcaaaa atgtattcac agagatctgg cagccagaaa tgtgttagta
1920
acagatgaca ttgtaatgaa gattgcagat ttcggcttgg ccagggacat ccacaacata
1980
gattattaca gaaaacaac aaatggtcgg ctgccagtca aatggatggc tccggaagct
2040
ttgttcgacc gtatctacac tcatcagagc gatgtatggt cgtacggagt gctgctgtgg
2100
gagatattta cactgggggg ctcgccctac ccagggatcc cagtagagga actctttaag
2160
ctattgaaag aaggccacag aatggacaag ccagcaaact gcacacatga actgtatatg
2220
atcatgagag agtgctggca cgctgtccca tcgcaaagac caaccttcaa gcagctggtt
2280
gaagaccttg accgcgttct tactgtaaca tctactgatg agtacctgga cctgtcggta
2340
ccattcgagc agtattcccc ggcgggccaa gacagtaaca gcacctgctc ctcggggggac
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gactcagtct ttgctcatga cattttaccc gatgaaccgt gtcttcccaa acaacagcag
2460
tacaacggcg ccatccgaac atga
2484

<210> 22
<211> 827
<212> PRT
<213> Xenopus laevis FGFR3-1

<400> 22
Met Ser Lys Ala Gly Gly Gly Cys Gly Ile Ala Leu Tyr Gln Gly Ile
 1   5   10   15
His Met Gly Ile Val Thr Leu Phe Cys Thr Leu Cys Phe Phe Leu Val
                20   25   30
Ser Val Asn Cys Val Pro Ala Ala Arg Leu Pro Val Thr Leu Pro Gly

34

```
               35                    40                    45
Glu Asp Arg Ala Asn Arg Lys Ala Ser Asp Tyr Leu Thr Val Glu Gln
    50                    55                    60
Pro Pro Phe Asp Glu Leu Met Phe Thr Ile Gly Glu Thr Ile Glu Leu
65                    70                    75                    80
Ser Cys Ser Ala Asp Asp Ala Ser Thr Thr Thr Lys Trp Phe Lys Asp
                  85                    90                    95
Gly Ile Gly Ile Val Pro Asn Asn Arg Thr Ser Thr Arg Gln Gly Leu
                  100                   105                   110
Leu Lys Ile Ile Asn Ile Ser Tyr Asp Asp Ser Gly Ile Tyr Ser Cys
                  115                   120                   125
Arg Leu Trp His Ser Thr Glu Ile Leu Arg Asn Phe Thr Ile Arg Val
    130                   135                   140
Thr Asp Leu Pro Ser Ser Gly Asp Asp Glu Asp Asp Asp Glu Thr
145                   150                   155                   160
Glu Asp Arg Glu Pro Pro Arg Trp Thr Gln Pro Glu Lys Met Glu Lys
                  165                   170                   175
Lys Leu Ile Ala Val Pro Ala Ala Asn Thr Ile Arg Phe Arg Cys Pro
                  180                   185                   190
Ala Ala Gly Asn Pro Thr Pro Thr Ile His Trp Leu Lys Asn Gly Lys
                  195                   200                   205
Glu Phe Arg Gly Glu His Arg Ile Gly Gly Ile Lys Leu Arg His Gln
    210                   215                   220
Gln Trp Ser Leu Val Met Glu Ser Val Val Pro Ser Asp Lys Gly Asn
225                   230                   235                   240
Tyr Thr Cys Val Val Glu Asn Lys Tyr Gly Ser Ile Arg Gln Thr Tyr
                  245                   250                   255
Gln Leu Asp Val Leu Glu Arg Ser Ser His Arg Pro Ile Leu Gln Ala
                  260                   265                   270
Gly Leu Pro Ala Asn Gln Thr Val Val Phe Gly Ser Asp Val Glu Phe
                  275                   280                   285
His Cys Lys Val Tyr Ser Asp Ala Gln Pro His Ile Gln Trp Leu Lys
    290                   295                   300
His Val Glu Val Asn Gly Ser Lys Tyr Gly Pro Asp Gly Asp Pro Tyr
305                   310                   315                   320
Val Thr Val Leu Gln Ser Phe Thr Asn Gly Thr Glu Val Asp Ser Thr
                  325                   330                   335
Leu Ser Leu Lys Asn Val Thr Glu Thr His Glu Gly Gln Tyr Val Cys
                  340                   345                   350
Arg Ala Asn Asn Phe Ile Gly Val Ala Glu Ala Ser Phe Trp Leu His
    355                   360                   365
Ile Tyr Lys Pro Ala Pro Ala Glu Pro Val Glu Lys Pro Ala Thr Thr
    370                   375                   380
Ser Ser Ser Ser Ile Thr Val Leu Ile Val Val Thr Ser Thr Ile Val
385                   390                   395                   400
Phe Ile Leu Leu Val Ile Ile Val Ile Thr Tyr Arg Met Lys Val Pro
                  405                   410                   415
Ser Lys Lys Ala Met Ser Thr Pro Pro Val His Lys Val Ser Lys Phe
                  420                   425                   430
Pro Leu Lys Arg Gln Val Ser Leu Glu Ser Asn Ser Ser Met Asn Ser
    435                   440                   445
Asn Thr Pro Leu Val Arg Ile Thr His Leu Ser Ser Ser Asp Gly Thr
    450                   455                   460
Met Leu Ala Asn Val Ser Glu Leu Gly Leu Pro Leu Asp Pro Lys Trp
465                   470                   475                   480
Glu Leu Leu Arg Ser Arg Leu Thr Leu Gly Lys Pro Leu Gly Glu Gly
```

35

```
                    485                   490                   495
Cys Phe Gly Gln Val Val Met Ala Glu Ala Ile Gly Ile Asp Lys Glu
                500                   505                   510
Arg Pro Asn Lys Pro Val Thr Val Ala Val Lys Met Leu Lys Asp Asp
            515                   520                   525
Ala Thr Asp Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu Met Met
        530                   535                   540
Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly Ala Cys
545                   550                   555                   560
Thr Gln Asp Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ser Lys Gly
                565                   570                   575
Asn Leu Arg Glu Tyr Leu Lys Ala Arg Arg Pro Pro Gly Met Asp Tyr
            580                   585                   590
Ser Phe Asp Thr Cys Lys Ile Pro Ala Glu Gln Leu Thr Phe Lys Asp
            595                   600                   605
Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr Leu Ala
        610                   615                   620
Ser Gln Lys Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val Leu Val
625                   630                   635                   640
Thr Asp Asp Ile Val Met Lys Ile Ala Asp Phe Gly Leu Ala Arg Asp
                645                   650                   655
Ile His Asn Ile Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg Leu Pro
                660                   665                   670
Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp Arg Ile Tyr Thr His
            675                   680                   685
Gln Ser Asp Val Trp Ser Tyr Gly Val Leu Leu Trp Glu Ile Phe Thr
        690                   695                   700
Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu Phe Lys
705                   710                   715                   720
Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys Thr His
                725                   730                   735
Glu Leu Tyr Met Ile Met Arg Glu Cys Trp His Ala Val Pro Ser Gln
                740                   745                   750
Arg Pro Thr Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Val Leu Thr
            755                   760                   765
Val Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser Val Pro Phe Glu Gln
770                   775                   780
Tyr Ser Pro Ala Gly Gln Asp Ser Asn Ser Thr Cys Ser Ser Gly Asp
785                   790                   795                   800
Asp Ser Val Phe Ala His Asp Ile Leu Pro Asp Glu Pro Cys Leu Pro
            805                   810                   815
Lys Gln Gln Gln Tyr Asn Gly Ala Ile Arg Thr
                820                   825
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<210> 23
<211> 2409
<212> DNA
<213> Xenopus laevis FGFR3-2

<400> 23
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atggtctctg tgaatggtgt cccggctgcc cgactgccag ttacgctccc tggagaggac 60
agagcgagca gaaaagcacc agattatctc atggtagaac agcccccatt cgatgaactc 120
atgtatacaa ttggagaaac cattgagttg tcctgcgctg cagaagatgc ttccacaact 180
accaagtggt gtaaggatgg tattggcatt gtaccgaaca cagaacaag cacaaggcag 240
ggcctgctga agattatcaa cgtctcctcc gatgactccg ggatatacag ctgcagacta 300
```

```
tggcattcta ccgagattct gcgcaatttt acaatcagag taacagactt gccatcatct 360
ggtgacgatg aggatgatga tgatgatgat gatgatgaaa ccgaagacag agaacctcct 420
cgctggaccc aacctgagag gatggaaaag aaacttattg cagtccctgc tgctaacaca 480
atccgcttcc ggtgcccagc cgcagggaat cccacccta ccatccactg gctaaagaac 540
ggaaaggagt tcaggggga acatcgtatt ggtggcatca aactccgaca tcaacagtgg 600
agccttgtta tggagagtgt ggtcccatca gataaaggca actacacgtg tgtggtggag 660
aacaaatatg gaagcatccg tcaaacctat caacttgatg tccttgagag gtcctctcac 720
cggcccatcc ttcaggctgg gttacccggc aaccagacgg ttgtgcttgg gagcgacgtg 780
gaattccact gcaaagtcta cagtgacgca caacctcata ttcagtggct aaacacgtg 840
gaagtgaatg gcagcaaata cggcccagac ggagatcctt acgtctcagt gttgcaatct 900
ttcatcaatg gcactgaagt cgattctacc ctaagtctaa aaatgtgac cgagaccaat 960
gaaggacagt atgtgtgtag agccaacaat ttcataggag tagccgaggc atccttttgg 1020
ctccacattt acaaaccagc accagcagaa ccagtggaga aggcattgac aacatcttcc 1080
agctctatca ccgtccttat tgtggtcacc tcgaccattg tgttcatact gttggttatc 1140
atcgtcatca cccacctcat gaaggtccct tccaagaagt caatgaccgc cccaccggtg 1200
cataaagtct ccaagttccc cctcaaacgg cagcaggtgt ctctagagtc caactcttct 1260
atgaattcca cacccgtt ggtgaggatc actcatctgt cctccagcga tggaaccatg 1320
ctggctaatg tgtcggaact tggcctgcca cttgacccca agtgggagtt attgagatca 1380
aggctgactt taggaaagcc cctcggggaa ggctgcttcg gtcaggtggt gatggcagaa 1440
gctattggca ttgataagga aaggccaaat aagcctgcta ctgtagctgt aaagatgctt 1500
aaagacgatg ccacagataa agatctctca gatctggtct ctgagatgga gatgatgaaa 1560
atgattggga agcataaaaa tatcatcaat ctgctgggag catgcactca ggatgggccg 1620
ctgtacgttc tggtggaata cgcatcgaaa gggagcctca gggagtattt aaaggcacgg 1680
cgcccccag gaatggatta ttcttttgat gcctgcaaaa ttccagctga gcagctgacg 1740
ttcaaggacc tagtttcttg tgcctaccag gtagctcgtg gcatggagta cctggcatca 1800
caaaaatgca ttcacagaga tctggcagcc agaaatgtgt tagtaacaga tgacaacgta 1860
atgaagattg cagatttcgg cttggccagg gacatccaca acatagatta ttacaagaaa 1920
acaacaaatg gtcggctgcc tgtgaaatgg atggctccgg aagctttgtt tgaccgtatc 1980
tacactcatc acagcgatgt atggtcgtac ggagtgctgc tgtgggagat atttacactg 2040
gggggctcac cctacccagg gatcccggta gaggaacttt ttaagctatt gaaagaaggc 2100
cacagaatgg acaagccagc aaactgcaca catgaactgt atatgatcat gagagagtgc 2160
tggcacgctg tcccctcaca agacccgcc ttcaagcagc tggttgaaga ccttgaccgc 2220
gttcttactg taacatctac taatgagtac ctagacctct cggtagcatt cgagcagtat 2280
```

```
tctccaccca gccaagacag tcacagcacc tgctcctcag gggacgactc agtctttgct
2340
cacgacattt tacccgatga accgtgtctt cccaaacacc agcagcacaa cggcgccatc
2400
cccacatga
2409
```

<210> 24
<211> 802
<212> PRT
<213> Xenopus laevis FGFR3-2

<400> 24

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Met Val Ser Val Asn Gly Val Pro Ala Ala Arg Leu Pro Val Thr Leu
 1               5                   10                  15
Pro Gly Glu Asp Arg Ala Ser Arg Lys Ala Pro Asp Tyr Leu Met Val
                20                  25                  30
Glu Gln Pro Pro Phe Asp Glu Leu Met Tyr Thr Ile Gly Glu Thr Ile
            35                  40                  45
Glu Leu Ser Cys Ala Ala Glu Asp Ala Ser Thr Thr Thr Lys Trp Cys
        50                  55                  60
Lys Asp Gly Ile Gly Ile Val Pro Asn Asn Arg Thr Ser Thr Arg Gln
65                  70                  75                  80
Gly Leu Leu Lys Ile Ile Asn Val Ser Ser Asp Asp Ser Gly Ile Tyr
                85                  90                  95
Ser Cys Arg Leu Trp His Ser Thr Glu Ile Leu Arg Asn Phe Thr Ile
                100                 105                 110
Arg Val Thr Asp Leu Pro Ser Ser Gly Asp Asp Glu Asp Asp Asp Asp
        115                 120                 125
Asp Asp Asp Asp Glu Thr Glu Asp Arg Glu Pro Pro Arg Trp Thr Gln
        130                 135                 140
Pro Glu Arg Met Glu Lys Lys Leu Ile Ala Val Pro Ala Ala Asn Thr
145                 150                 155                 160
Ile Arg Phe Arg Cys Pro Ala Ala Gly Asn Pro Thr Pro Thr Ile His
                165                 170                 175
Trp Leu Lys Asn Gly Lys Glu Phe Arg Gly Glu His Arg Ile Gly Gly
                180                 185                 190
Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val Met Glu Ser Val Val
        195                 200                 205
Pro Ser Asp Lys Gly Asn Tyr Thr Cys Val Val Glu Asn Lys Tyr Gly
        210                 215                 220
Ser Ile Arg Gln Thr Tyr Gln Leu Asp Val Leu Glu Arg Ser Ser His
225                 230                 235                 240
Arg Pro Ile Leu Gln Ala Gly Leu Pro Gly Asn Gln Thr Val Val Leu
                245                 250                 255
Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr Ser Asp Ala Gln Pro
                260                 265                 270
His Ile Gln Trp Leu Lys His Val Glu Val Asn Gly Ser Lys Tyr Gly
            275                 280                 285
Pro Asp Gly Asp Pro Tyr Val Ser Val Leu Gln Ser Phe Ile Asn Gly
        290                 295                 300
Thr Glu Val Asp Ser Thr Leu Ser Leu Lys Asn Val Thr Glu Thr Asn
305                 310                 315                 320
Glu Gly Gln Tyr Val Cys Arg Ala Asn Asn Phe Ile Gly Val Ala Glu
                325                 330                 335
Ala Ser Phe Trp Leu His Ile Tyr Lys Pro Ala Pro Ala Glu Pro Val
```

```
                    340                     345                     350
Glu Lys Ala Leu Thr Thr Ser Ser Ser Ser Ile Thr Val Leu Ile Val
        355                     360                     365
Val Thr Ser Thr Ile Val Phe Ile Leu Leu Val Ile Ile Val Ile Thr
        370                     375                     380
His Leu Met Lys Val Pro Ser Lys Lys Ser Met Thr Ala Pro Pro Val
385                     390                     395                     400
His Lys Val Ser Lys Phe Pro Leu Lys Arg Gln Gln Val Ser Leu Glu
                    405                     410                     415
Ser Asn Ser Ser Met Asn Ser Asn Thr Pro Leu Val Arg Ile Thr His
                    420                     425                     430
Leu Ser Ser Ser Asp Gly Thr Met Leu Ala Asn Val Ser Glu Leu Gly
        435                     440                     445
Leu Pro Leu Asp Pro Lys Trp Glu Leu Leu Arg Ser Arg Leu Thr Leu
        450                     455                     460
Gly Lys Pro Leu Gly Glu Gly Cys Phe Gly Gln Val Val Met Ala Glu
465                     470                     475                     480
Ala Ile Gly Ile Asp Lys Glu Arg Pro Asn Lys Pro Ala Thr Val Ala
                    485                     490                     495
Val Lys Met Leu Lys Asp Asp Ala Thr Asp Lys Asp Leu Ser Asp Leu
                    500                     505                     510
Val Ser Glu Met Glu Met Met Lys Met Ile Gly Lys His Lys Asn Ile
        515                     520                     525
Ile Asn Leu Leu Gly Ala Cys Thr Gln Asp Gly Pro Leu Tyr Val Leu
        530                     535                     540
Val Glu Tyr Ala Ser Lys Gly Ser Leu Arg Glu Tyr Leu Lys Ala Arg
545                     550                     555                     560
Arg Pro Pro Gly Met Asp Tyr Ser Phe Asp Ala Cys Lys Ile Pro Ala
                    565                     570                     575
Glu Gln Leu Thr Phe Lys Asp Leu Val Ser Cys Ala Tyr Gln Val Ala
                    580                     585                     590
Arg Gly Met Glu Tyr Leu Ala Ser Gln Lys Cys Ile His Arg Asp Leu
        595                     600                     605
Ala Ala Arg Asn Val Leu Val Thr Asp Asp Asn Val Met Lys Ile Ala
        610                     615                     620
Asp Phe Gly Leu Ala Arg Asp Ile His Asn Ile Asp Tyr Tyr Lys Lys
625                     630                     635                     640
Thr Thr Asn Gly Arg Leu Pro Val Lys Trp Met Ala Pro Glu Ala Leu
                    645                     650                     655
Phe Asp Arg Ile Tyr Thr His His Ser Asp Val Trp Ser Tyr Gly Val
                    660                     665                     670
Leu Leu Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile
        675                     680                     685
Pro Val Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly His Arg Met Asp
        690                     695                     700
Lys Pro Ala Asn Cys Thr His Glu Leu Tyr Met Ile Met Arg Glu Cys
705                     710                     715                     720
Trp His Ala Val Pro Ser Gln Arg Pro Ala Phe Lys Gln Leu Val Glu
                    725                     730                     735
Asp Leu Asp Arg Val Leu Thr Val Thr Ser Thr Asn Glu Tyr Leu Asp
                    740                     745                     750
Leu Ser Val Ala Phe Glu Gln Tyr Ser Pro Pro Ser Gln Asp Ser His
        755                     760                     765
Ser Thr Cys Ser Ser Gly Asp Asp Ser Val Phe Ala His Asp Ile Leu
        770                     775                     780
Pro Asp Glu Pro Cys Leu Pro Lys His Gln Gln His Asn Gly Ala Ile
```

39

```
785                790                795                800
Pro Thr
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```
<210> 25
<211> 2391
<212> DNA
<213> Pleurodeles waltlii FGFR3

<400> 25
atgctcgtct ggctctgcgg cttgtgtctg gtgactctgg cgggcggacg ttcggcggcc 60
aggctgcccc tcaccgaggg ccgacccaca gcagacttcc tgcccggcga cgcctccctg 120
gtggaagagc tcctgttcgg cacgggggac accatcgagc tctcctgcac cacccccggc 180
tcctctgtgt ccgtggtgtg gttcaaagac gggatctcgg tggacccacc aacctggtcc 240
cacaccggcc agaagctgct gaagatcatc aacgtgtcct acgacgactc gggagtgtac 300
agctgcaagg cccggcagtc cagcgaggtg ctccggaacg tgaccgtcag ggtgaccgat 360
tctccgtcat ccggtgatga cgaagatgat gatgaggaat ctgaaagtgc aaatgcacca 420
aaattcacgc gaccggaatg gatggagaag aaactgcttg cagtgcccgc agccaacacg 480
gtgcgcttcc gatgcccagc tgcaggaaag ccaacgccat ccatcacttg gctgaaaaac 540
ggcaaggagt tcaaaggcga gcatcggatt gggggcataa agctaagaca ccagcagtgg 600
agtttggtga tggagagtgt agtcccatcc gatcggggaa attacacatg tgtggtggca 660
aacaagtacg gcaccatccg agagacctac acattggatg tccttgaacg aactcctcac 720
cggcccatcc tccaggcggg attccgttcc aacaagactg tggtggtagg aagcgatgtg 780
gagttccatt gcaaggtata cagtgatgct cagccgcaca tccagtggct gaaacacgtg 840
gaggttaatg gcagcaagtt tggacctgat gggaacccgt atgtcacagt gcttaagacg 900
gcaggtgtta atacctcgga taaggagcta gaaattcagt tcttgcgaaa tgtaactttt 960
gaggatgctg gggagtatac ttgtctcgct gggaactcta ttggctattc ccatcattct
1020
gcttggctca cggtgctgcc accagcagag ccggtcccag acgtcgacac ctctgtcagc
1080
attcttgccg ctgcaggatg tgtcgcagtt gttatactgg tggtgatcat aatctttact
1140
tacaagatga agatgccctc caagaagacc atgaacaccg ccactgtgca caaagtctca
1200
aagttccctc tcaagagaca ggtgtcactg gagtccaact cttcaatgaa ttccaacacc
1260
cctctggtgc gaatcacccg cctgtcgtcc agcgatggtc cgatgctggc caacgtgtcc
1320
gagctggagc tacccgctga tccgaagtgg gaattgtctc gttcacgctt gactttgggc
1380
aaacctcttg gggaaggatg ctttggccag gtggtgatgg cggatgcagt tggcattgaa
1440
aaggataagc caaacaaggc cacctcggtt gccgttaaga tgttgaaaga tgatgccact
1500
gataaagacc tgtcggatct agtctctgaa atggaaatga tgaaaatgat tgggaagcac
1560
aaaaacatca ttaatctcct gggagcctgc acgcaggatg cccactcta cgtgctggtg
1620
gaatatgcat ccaaaggaaa cttgcgggag tacctgaggg cccggcgccc tcctggcatg
1680
gattactcct tcgacacctg caaacttccc gaagagcagt tgaccttcaa ggacttggta
1740
tcctgtgcct accaggtggc ccgcggcatg gagtacctgg cctctcagaa gtgcatacac
1800
```

40

```
cgagatctgg cagcccggaa cgtgctggtg acggatgaca acgttatgaa gattgctgat
1860
tttggcctgg cgagagatgt gcacaacatc gactactaca agaaaactac aaatggccga
1920
ctgcccgtga agtggatggc tccggaggct ttgttcgacc gggtctacac tcaccaaagc
1980
gacgtctggt cgtttggagt gcttctgtgg gagatcttca cgctggggggg ctcgccgtac
2040
cctggaatcc cagtggaaga actcttcaag ctgttaaagg aaggccatcg aatggacaaa
2100
ccagcgaact gcacgcatga gctgtacatg atcatgcggg agtgctggca tgcagtgcca
2160
tcccagcggc caaccttcaa gcaactcgta gaagacttgg accgggtcct tacggtgacc
2220
tccactgatg agtacctcga tctctctgtg cccttcgagc agtattcgcc tgcctgccca
2280
gacagccaca gcagctgctc ttctggagac gattcggtct ttgcccacga cctgcccgag
2340
gagccctgcc ttccgaagca ccagcagtac aatggagtaa tccgaacatg a
2391
```

<210> 26
<211> 796
<212> PRT
<213> Pleurodeles waltlii FGFR3

<400> 26

```
Met Leu Val Trp Leu Cys Gly Leu Cys Leu Val Thr Leu Ala Gly Gly
 1               5                   10                  15
Arg Ser Ala Ala Arg Leu Pro Leu Thr Glu Gly Arg Pro Thr Ala Asp
            20                  25                  30
Phe Leu Pro Gly Asp Ala Ser Leu Val Glu Glu Leu Leu Phe Gly Thr
        35                  40                  45
Gly Asp Thr Ile Glu Leu Ser Cys Thr Thr Pro Gly Ser Ser Val Ser
     50                  55                  60
Val Val Trp Phe Lys Asp Gly Ile Ser Val Asp Pro Pro Thr Trp Ser
65                  70                  75                  80
His Thr Gly Gln Lys Leu Leu Lys Ile Ile Asn Val Ser Tyr Asp Asp
                85                  90                  95
Ser Gly Val Tyr Ser Cys Lys Ala Arg Gln Ser Ser Glu Val Leu Arg
               100                 105                 110
Asn Val Thr Val Arg Val Thr Asp Ser Pro Ser Ser Gly Asp Asp Glu
           115                 120                 125
Asp Asp Asp Glu Glu Ser Glu Ser Ala Asn Ala Pro Lys Phe Thr Arg
     130                 135                 140
Pro Glu Trp Met Glu Lys Lys Leu Leu Ala Val Pro Ala Ala Asn Thr
145                 150                 155                 160
Val Arg Phe Arg Cys Pro Ala Ala Gly Lys Pro Thr Pro Ser Ile Thr
                165                 170                 175
Trp Leu Lys Asn Gly Lys Glu Phe Lys Gly Glu His Arg Ile Gly Gly
               180                 185                 190
Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val Met Glu Ser Val Val
           195                 200                 205
Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val Ala Asn Lys Tyr Gly
     210                 215                 220
Thr Ile Arg Glu Thr Tyr Thr Leu Asp Val Leu Glu Arg Thr Pro His
```

41

```
225                         230                         235                         240
Arg Pro Ile Leu Gln Ala Gly Phe Arg Ser Asn Lys Thr Val Val Val
                    245                         250                         255
Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr Ser Asp Ala Gln Pro
                    260                         265                         270
His Ile Gln Trp Leu Lys His Val Glu Val Asn Gly Ser Lys Phe Gly
                    275                         280                         285
Pro Asp Gly Asn Pro Tyr Val Thr Val Leu Lys Thr Ala Gly Val Asn
    290                         295                         300
Thr Ser Asp Lys Glu Leu Glu Ile Gln Phe Leu Arg Asn Val Thr Phe
305                         310                         315                         320
Glu Asp Ala Gly Glu Tyr Thr Cys Leu Ala Gly Asn Ser Ile Gly Tyr
                    325                         330                         335
Ser His His Ser Ala Trp Leu Thr Val Leu Pro Pro Ala Glu Pro Val
                    340                         345                         350
Pro Asp Val Asp Thr Ser Val Ser Ile Leu Ala Ala Ala Gly Cys Val
    355                         360                         365
Ala Val Val Ile Leu Val Val Ile Ile Ile Phe Thr Tyr Lys Met Lys
    370                         375                         380
Met Pro Ser Lys Lys Thr Met Asn Thr Ala Thr Val His Lys Val Ser
385                         390                         395                         400
Lys Phe Pro Leu Lys Arg Gln Val Ser Leu Glu Ser Asn Ser Ser Met
                    405                         410                         415
Asn Ser Asn Thr Pro Leu Val Arg Ile Thr Arg Leu Ser Ser Ser Asp
                    420                         425                         430
Gly Pro Met Leu Ala Asn Val Ser Glu Leu Glu Leu Pro Ala Asp Pro
                    435                         440                         445
Lys Trp Glu Leu Ser Arg Ser Arg Leu Thr Leu Gly Lys Pro Leu Gly
    450                         455                         460
Glu Gly Cys Phe Gly Gln Val Val Met Ala Asp Ala Val Gly Ile Glu
465                         470                         475                         480
Lys Asp Lys Pro Asn Lys Ala Thr Ser Val Ala Val Lys Met Leu Lys
                    485                         490                         495
Asp Asp Ala Thr Asp Lys Asp Leu Ser Asp Leu Val Ser Glu Met Glu
                    500                         505                         510
Met Met Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn Leu Leu Gly
    515                         520                         525
Ala Cys Thr Gln Asp Gly Pro Leu Tyr Val Leu Val Glu Tyr Ala Ser
    530                         535                         540
Lys Gly Asn Leu Arg Glu Tyr Leu Arg Ala Arg Arg Pro Pro Gly Met
545                         550                         555                         560
Asp Tyr Ser Phe Asp Thr Cys Lys Leu Pro Glu Glu Gln Leu Thr Phe
                    565                         570                         575
Lys Asp Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly Met Glu Tyr
                    580                         585                         590
Leu Ala Ser Gln Lys Cys Ile His Arg Asp Leu Ala Ala Arg Asn Val
                    595                         600                         605
Leu Val Thr Asp Asp Asn Val Met Lys Ile Ala Asp Phe Gly Leu Ala
    610                         615                         620
Arg Asp Val His Asn Ile Asp Tyr Tyr Lys Lys Thr Thr Asn Gly Arg
625                         630                         635                         640
Leu Pro Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp Arg Val Tyr
                    645                         650                         655
Thr His Gln Ser Asp Val Trp Ser Phe Gly Val Leu Leu Trp Glu Ile
                    660                         665                         670
Phe Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val Glu Glu Leu
```

```
                    675                 680                 685
Phe Lys Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro Ala Asn Cys
    690                 695                 700
Thr His Glu Leu Tyr Met Ile Met Arg Glu Cys Trp His Ala Val Pro
705                 710                 715                 720
Ser Gln Arg Pro Thr Phe Lys Gln Leu Val Glu Asp Leu Asp Arg Val
                725                 730                 735
Leu Thr Val Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser Val Pro Phe
                740                 745                 750
Glu Gln Tyr Ser Pro Ala Cys Pro Asp Ser His Ser Ser Cys Ser Ser
                755                 760                 765
Gly Asp Asp Ser Val Phe Ala His Asp Leu Pro Glu Glu Pro Cys Leu
    770                 775                 780
Pro Lys His Gln Gln Tyr Asn Gly Val Ile Arg Thr
785                 790                 795
```

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<210> 27
<211> 2403
<212> DNA
<213> Danio rerio FGFR3

<400> 27
atggtcccac tctgtctcct cctgtacctc gcaaccctcg tcttcccacc agtgtacagt 60
gcacacctgc tgtccccaga gcccacagac tgggtatcga gtgaggtgga agtgtttctg 120
gaggactatg tggcggggagt cggggataca gtagttctgt cctgcacgcc gcaagacttt 180
ctccttccca tcgtatggca aaaagacgga gacgccgttt cttcaagcaa ccgtacacga 240
gtgggccaga aagccctccg catcatcaat gtctcctatg aagactcggg tgtttactcc 300
tgcagacatg cccacaagag catgcttctg agcaactaca ccgtcaaagt catcgattcg 360
ctgtcctctg tgatgatga ggactatgat gaagatgagg acgaggcagg taatggaaat 420
gcagaagctc catactggac ccgttcggac cggatggaga agaaactatt ggctgttcct 480
gctgccaata cagtcaagtt ccgctgtcct gctgctggca acccaacgcc cagtatccat 540
tggctgaaaa atggcaagga gttcaaggga gagcagagaa tgggcggcat taagctgagg 600
catcagcagt ggagcttggt catggagagt gccgttccat ccgaccgggg aaattacaca 660
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2403
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<213> Danio rerio FGFR3

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Pro Val Tyr Ser Ala His Leu Leu Ser Pro Glu Pro Thr Asp Trp Val
             20                  25                  30
Ser Ser Glu Val Glu Val Phe Leu Glu Asp Tyr Val Ala Gly Val Gly
         35                  40                  45
Asp Thr Val Val Leu Ser Cys Thr Pro Gln Asp Phe Leu Leu Pro Ile
     50                  55                  60
Val Trp Gln Lys Asp Gly Asp Ala Val Ser Ser Ser Asn Arg Thr Arg
65                  70                  75                  80
Val Gly Gln Lys Ala Leu Arg Ile Ile Asn Val Ser Tyr Glu Asp Ser
                 85                  90                  95
Gly Val Tyr Ser Cys Arg His Ala His Lys Ser Met Leu Leu Ser Asn
             100                 105                 110
Tyr Thr Val Lys Val Ile Asp Ser Leu Ser Ser Gly Asp Asp Glu Asp
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                  115                     120                     125
Tyr Asp Glu Asp Glu Asp Glu Ala Gly Asn Gly Asn Ala Glu Ala Pro
          130                     135                     140
Tyr Trp Thr Arg Ser Asp Arg Met Glu Lys Lys Leu Leu Ala Val Pro
145                     150                     155                     160
Ala Ala Asn Thr Val Lys Phe Arg Cys Pro Ala Ala Gly Asn Pro Thr
                  165                     170                     175
Pro Ser Ile His Trp Leu Lys Asn Gly Lys Glu Phe Lys Gly Glu Gln
                  180                     185                     190
Arg Met Gly Gly Ile Lys Leu Arg His Gln Gln Trp Ser Leu Val Met
                  195                     200                     205
Glu Ser Ala Val Pro Ser Asp Arg Gly Asn Tyr Thr Cys Val Val Gln
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Asn Lys Tyr Gly Ser Ile Lys His Thr Tyr Gln Leu Asp Val Leu Glu
225                     230                     235                     240
Arg Ser Pro His Arg Pro Ile Leu Gln Ala Gly Leu Pro Ala Asn Gln
                  245                     250                     255
Thr Val Val Val Gly Ser Asp Val Glu Phe His Cys Lys Val Tyr Ser
                  260                     265                     270
Asp Ala Gln Pro His Ile Gln Trp Leu Lys His Ile Glu Val Asn Gly
          275                     280                     285
Ser Gln Tyr Gly Pro Asn Gly Ala Pro Tyr Val Asn Val Leu Lys Thr
          290                     295                     300
Ala Gly Ile Asn Thr Thr Asp Lys Glu Leu Glu Ile Leu Tyr Leu Thr
305                     310                     315                     320
Asn Val Ser Phe Glu Asp Ala Gly Gln Tyr Thr Cys Leu Ala Gly Asn
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Ser Ile Gly Tyr Asn His His Ser Ala Trp Leu Thr Val Leu Pro Ala
                  340                     345                     350
Val Glu Met Glu Arg Glu Asp Asp Tyr Ala Asp Ile Leu Ile Tyr Val
          355                     360                     365
Thr Ser Cys Val Leu Phe Ile Leu Thr Met Val Ile Ile Ile Leu Cys
          370                     375                     380
Arg Met Trp Ile Asn Thr Gln Lys Thr Leu Pro Ala Pro Pro Val Gln
385                     390                     395                     400
Lys Leu Ser Lys Phe Pro Leu Lys Arg Gln Val Ser Leu Glu Ser Asn
                  405                     410                     415
Ser Ser Met Asn Ser Asn Thr Pro Leu Val Arg Ile Ala Arg Leu Ser
                  420                     425                     430
Ser Ser Asp Gly Pro Met Leu Pro Asn Val Ser Glu Leu Glu Leu Pro
          435                     440                     445
Ser Asp Pro Lys Trp Glu Phe Thr Arg Thr Lys Leu Thr Leu Gly Lys
          450                     455                     460
Pro Leu Gly Glu Gly Cys Phe Gly Gln Val Val Met Ala Glu Ala Ile
465                     470                     475                     480
Gly Ile Asp Lys Glu Lys Pro Asn Lys Pro Leu Thr Val Ala Val Lys
                  485                     490                     495
Met Leu Lys Asp Asp Gly Thr Asp Lys Asp Leu Ser Asp Leu Val Ser
                  500                     505                     510
Glu Met Glu Met Met Lys Met Ile Gly Lys His Lys Asn Ile Ile Asn
          515                     520                     525
Leu Leu Gly Ala Cys Thr Gln Asp Gly Pro Leu Tyr Val Leu Val Glu
          530                     535                     540
Tyr Ala Ser Lys Gly Asn Leu Arg Glu Tyr Leu Arg Ala Arg Arg Pro
545                     550                     555                     560
Pro Gly Met Asp Tyr Ser Phe Asp Thr Cys Lys Ile Pro Asn Glu Thr
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                      565                      570                      575
Leu Thr Phe Lys Asp Leu Val Ser Cys Ala Tyr Gln Val Ala Arg Gly
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Met Glu Tyr Leu Ala Ser Lys Lys Cys Ile His Arg Asp Pro Ala Ala
            595                      600                      605
Arg Asn Val Leu Val Thr Glu Asp Asn Val Met Lys Ile Ala Asp Phe
        610                      615                      620
Gly Leu Ala Arg Asp Val His Asn Ile Asp Tyr Tyr Lys Lys Thr Thr
625                      630                      635                      640
Asn Gly Arg Leu Pro Val Lys Trp Met Ala Pro Glu Ala Leu Phe Asp
                645                      650                      655
Arg Val Tyr Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Leu Leu
                660                      665                      670
Trp Glu Ile Phe Thr Leu Gly Gly Ser Pro Tyr Pro Gly Ile Pro Val
            675                      680                      685
Glu Glu Leu Phe Lys Leu Leu Lys Glu Gly His Arg Met Asp Lys Pro
        690                      695                      700
Ala Asn Cys Thr His Glu Leu Tyr Met Ile Met Arg Glu Cys Trp His
705                      710                      715                      720
Ala Val Pro Ser Gln Arg Pro Thr Phe Arg Gln Leu Val Glu Asp His
                725                      730                      735
Asp Arg Val Leu Ser Met Thr Ser Thr Asp Glu Tyr Leu Asp Leu Ser
                740                      745                      750
Val Pro Phe Glu Gln Tyr Ser Pro Thr Cys Pro Asp Ser Asn Ser Thr
            755                      760                      765
Cys Ser Ser Gly Asp Asp Ser Val Phe Ala His Asp Pro Leu Pro Glu
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Glu Pro Cys Leu Pro Lys His His His Ser Asn Gly Val Ile Arg Thr
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<213> Artificial Sequence

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<212> DNA
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<220>
<223> PCR Primer 4

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